BUREAU OF HYGIENE & TROPICAL DISEASES
20 JAN 1930

COLONY AND PROTECTORATE OF KENYA.

ANNUAL MEDICAL REPORT

For the Year ending 31st December,

1928

INCLUDING

THE ANNUAL REPORT

OF THE

MEDICAL RESEARCH LABORATORY

For the Year 1928.

NAIROBI:
PRINTED BY THE GOVERNMENT PRINTER,
1929

21241

BUREAU OF HYGIENE & TROPICAL DISEASES
20 JAN 1930

COLONY AND PROTECTORATE OF KENYA.

ANNUAL MEDICAL REPORT

For the Year ending 31st December,

1928

INCLUDING

THE ANNUAL REPORT

OF THE

MEDICAL RESEARCH LABORATORY

For the Year 1928.

NAIROBI:
PRINTED BY THE GOVERNMENT PRINTER.
1929.

Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

https://archive.org/details/b3149318x

No. 16/712/52.

MEDICAL DEPARTMENT,
HEAD OFFICES,
Nairobi, 7th June, 1929.

Sir,

I have the honour to submit for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Colony and Protectorate of Kenya for the year 1928, together with the Returns, etc., appended thereto.

I have the honour to be,
Sir,
Your obedient servant,
JOHN L. GILKS,
Director of Medical and Sanitary Services.

The Honourable,
The Colonial Secretary,
Nairobi.

CONTENTS.

PAGE.
ADMINISTRATION ... 1
Establishment ... 2
Legislation ... 3
Registration of Medical Practitioners and Dentists ... 4
The Drugs and Poisons Ordinance, 1909 ... 5
The Public Health Ordinance, 1913 ... 5
The Public Health Ordinance, 1921 ... 5
Financial ... 5

PUBLIC HEALTH ... 6
1. Malaria ... 8
2. Blackwater Fever ... 10
3. Plague ... 10
4. Trypanosomiasis ... 14
5. Relapsing Fever ... 14
6. Dengue ... 14
7. Yaws ... 14
8. Syphilis ... 16
9. Leprosy ... 16
10. Smallpox ... 17
Vaccination ... 17
11. Pneumonia ... 18
12. Tuberculosis ... 18
13. Cerebro-spinal Fever ... 19
14. Anthrax ... 19
15. Influenza ... 19
16. Enteric ... 19
17. Typhus ... 20
18. Dysentery ... 20
19. Undulant Fever ... 20
20. Diphtheria ... 20
21. Whooping Cough ... 21
22. Encephalitis Lethargica ... 21
23. Helminthiasis ... 21
Anchylostomiasis ... 21
General ... 23

VITAL STATISTICS.

Population ... 23
Nairobi ... 24
Mombasa ... 25
Kisumu ... 28
Eldoret ... 29
Kitale ... 29
European Officials ... 31
Non-European Officials ... 32

HYGIENE AND SANITATION.

Preventive Measures ... 33

Mosquito and Insect Borne Diseases—

Malaria ... 35
Trypanosomiasis ... 36

Epidemic Diseases—

Plague ... 36
Smallpox ... 36
Dysentery ... 36
Enteric ... 36
Tuberculosis ... 37
Yaws ... 37
Syphilis ... 37
Helminthic Diseases ... 38

HYGIENE AND SANITATION—*Contd.*

PAGE.
General Measures of Sanitation—
  Sewage Disposal ... 39
  Scavenging and Refuse Disposal ... 39
  Water Supplies ... 39
  Offensive Trades ... 40
  School Medical Inspection ... 40
Labour Conditions ... 40
Housing and Town Planning ... 42
Food in Relation to Health and Disease ... 44
Measures taken to spread the knowledge of Hygiene and Sanitation 45
Training of Sanitary Personnel ... 46
Recommendations for Future Work ... 46

PORT SANITATION.

Pratique and Bills of Health ... 46
Infectious Diseases on Vessels arriving ... 47
Examination of Food and Second-hand Clothing ... 48
Quarantine Station ... 48
MATERNITY AND CHILD WELFARE ... 49

HOSPITALS, DISPENSARIES AND INSTITUTIONS.

General Remarks ... 49
European Hospitals ... 50
Native Hospitals and Dispensaries ... 51
Dispensaries ... 52
Venereal Disease Clinics ... 52
Mathari Mental Hospital ... 52
Gaols ... 54

RETURNS.

Table I. Staff ... 55
Table II. Financial ... 58
Table III. Statistics of Population ... 59
Table IV. Meteorological ... 60
Table V. Return of Diseases and Deaths (In-patients) Form—
  European Officials ... 62
  General European Population ... 62
  Non-European Officials ... 62
  General Native Population ... 62
Table VI. Return of Diseases (Out-patients) Form—
  European Officials ... 78
  General European Population ... 78
  Non-European Officials ... 78
  General Native Population ... 78
Table VII. Enteric Fever Statistics ... 93

APPENDICES.

A.—Annual Report of the Proceedings of the Board of Health (The Public Health Ordinance, 1913) ... 94
B.—Annual Report of the Proceedings of the Central Board of Health (The Public Health Ordinance, 1921) ... 95
C.—Summary of Statistics, Digo District ... 97
Proportions in Percentages of Epidemic, Endemic and Infectious Diseases, In- and Out-patients, treated at Hospitals and Dispensaries ... 127
Proportion of Epidemic, Endemic, Infectious, Systemic and Other Diseases shown as Percentages of Total Cases treated at Hospitals and Dispensaries ... 129

ANNUAL REPORT OF THE MEDICAL RESEARCH LABORATORY FOR 1928 ... 101

ADMINISTRATION.

The system of health administration throughout the Colony and Protectorate remained unchanged during 1928. Local authorities with the exception of the Nairobi Municipality consisted of the District Commissioner and the Medical Officer or Medical Officer of Health.

Legislation on the lines recommended by the Local Government Commission Report was introduced and passed by Legislative Council. Great and far-reaching changes will occur as a result. Municipal bodies will be formed to take control of the town of Mombasa and other towns, and these will be charged with the responsibility of their own health affairs, subject to the general control of the Governor who will be advised by a central committee. These bodies will in several instances employ their own staff of medical officers of health and sanitary inspectors. A great innovation will be brought about but there is no reason to anticipate that ill effects will follow; indeed it is difficult to see how progress could have been maintained without some decentralisation of authority.

In addition to the local government ordinances an amending ordinance to the Public Health Ordinance, 1921, passed all its stages in Legislative Council. In future the District Commissioner is to be the Local Authority instead of, as heretofore, the District Commissioner and medical officer. The new arrangement is more correct from the administrative point of view and definitely decides responsibility.

Medical officers of health have been appointed for each district and District Commissioners now know definitely to whom they are to turn for advice on health matters.

Departmental administration has proceeded as heretofore. The question of the appointment to districts of senior officers with executive powers was seriously considered. It was decided, however, that such appointments could not be instituted immediately. A system of liaison officers was established by which certain senior officers were charged with the duty of watching and correlating all medical activities in their special areas and were given powers to issue instructions in emergencies. The system has proved itself a success and marks a definite stage forward which may lead to the appointment of senior officers who will be charged with the full responsibility for the areas under their control. The provincial administrations have regarded liaison officers as their advisors.

The Estimates for 1928 allowed of the following increases:—

Medical officers	2
Nursing sisters	5
Sanitation officers	3

In addition, supplementary provision was voted to allow of the employment of an extra medical officer and four additional sub-assistant surgeons for special work in connection with the Railway. At the end of the year there were vacancies for one medical officer, one sanitation officer, a matron and two nursing sisters.

During the period under review a medical officer was posted to commence work in the South Nyeri Reserve in the hopes that the hospital and buildings which had been arranged for in connection with loan expenditure would materialise at an early date. Temporary accommodation was provided.

The provision as regards leave, etc., appeared to allow in the last quarter of the year of a definite posting to the Railway and of an officer to commence work in the Plateau and Trans Nzoia Districts in connection with the anti-malaria programme in contemplation for 1929. Unexpected casualties rendered the position very awkward at the end of the year and considerable difficulty was experienced in maintaining the two new posts which had been created in anticipation of the appointment of new staff.

It was impossible to maintain a medical officer of health at Nakuru though this in itself was not of very great moment as the district was badly affected by drought and general activities of every kind were curtailed.

A medical officer of health, as foreshadowed in the 1927 Annual Report, was posted to the Plateau and Trans Nzoia Districts with headquarters at Eldoret. The value of the appointment has become very evident in view of the position which eventuated in connexion with malaria during the year. It was necessary at the close of the year, for reasons already stated, to revert to the position which existed during 1927 when there was one medical officer of health for the Plateau, Trans Nzoia and Nakuru areas.

A nursing sister was posted to the new native hospital at Kakamega, the first posting of the kind to be made to a hospital situated in a Native Reserve. As was anticipated, the appointment has proved a success.

The increased incidence of malaria and the outbreaks which occured during the year in districts unprovided with medical officers considerably strained the resources and personnel of the Department. It was necessary to take emergency measures and for a considerable period during the year three officers had to be withdrawn from other districts in order to cope with the situation.

The Senior Medical Officer, Labour, was seconded throughout the year to the Native Affairs Department where he acted as Chief Labour Inspector. The duties of labour inspectors and medical officers as defined by law considerably overlap and the arrangement prevents confusion and reduplication of effort. The closest liaison is effected between the two departments and a line of policy is maintained.

A local engagement of a lady medical officer was made in place of one of the sanitation officers (health officers) allowed for on Estimates. The appointment allowed for the development of maternity and child welfare work at Mombasa.

In addition to the creation of the medical and nursing posts referred to above, the 1928 Estimates allowed for the appointment of :—

1 European clerk,
1 Asiatic clerk,
1 European laboratory assistant.

The appointment of the additional laboratory assistant allowed for the opening of a small laboratory at Mombasa.

The appointment of a sergeant instructor was not proceeded with as, owing to difficulties in connexion with staff, it was not possible to initiate the scheme of African training.

The scheme for the medical services of the Native Reserves of the country which had been prepared and presented to Government in 1927 received definite sanction during 1928.

ESTABLISHMENT.

The establishment of the Medical Department as sanctioned for the year 1928 was as follows :—

Administrative Division.

Director of Medical and Sanitary Services	1
Deputy Director of Medical Service	1
Deputy Director of Sanitary Service	1
Senior Medical Officer	1
Senior Sanitation Officer	1
Chief Sanitary Inspector	1
Medical Storekeeper	1
Office Superintendent	1
Accountant	1
European Clerks	14
Non-European Clerks	22
2nd Grade Issuers of Medical Stores	2
Messengers, Packers, Office Boys, etc.	16

Medical Division.

Surgical Specialist	1
Senior Medical Officers	5
Medical Officers	34
District Surgeons	4
Assistant Surgeons	2
Dispensers	3
Matron	1
Nursing Sisters	32
Male Nursing Orderlies	3
Wardmaster	1
Sergeant Instructor	1
Superintendent, Mental Hospital	1
Matron, Mental Hospital	1
Assistant Matron, Mental Hospital	1
Warders, Mental Hospital	2
Assistant Surgeons	3
Sub-Assistant Surgeons	22
Compounders	8
Motor Car Drivers	5
Native Hospital Attendants	(as necessary).
Mental Hospital Attendants	(as necessary).

Sanitation Division.

Senior Sanitation Officers	2
Sanitation Officers	10
Senior Sanitary Inspectors	3
Sanitary Inspectors	19
Sanitary Overseers	6
Superintendent of Infectious Diseases Hospital	1
Nursing Sisters	4
Vaccinators	(as necessary).
Native Attendants for Infectious Diseases Hospital, Leper Lazarettes and Quarantine Stations	(as necessary).
Machanics and Greasers	2

Laboratory Division.

Deputy Director of Laboratory Services	1
Senior Bacteriologist	1
Assistant Bacteriologists	3
Government Analyst	1
Chemical Officer	1
Entomologists	2
Laboratory Assistants	4
European Laboratory Assistants (Learner Grade)	4
1st Grade Laboratory Assistant	1
2nd Grade Laboratory Assistant	1
3rd Grade Laboratory Assistants	2
African Laboratory Assistants (Learner Grade)	32
Native Laboratory Attendants	(as necessary).

LEGISLATION.

Ordinance affecting the Public Health passed during the year.

Public Healh Administration in Settled Areas—Local Government Organisation.

During the year legislation was prepared and ultimately passed by the Legislative Council which will give effect to the recommendations of the Local Government Commission of 1926. The legislation consists of four Ordinances as follows :—

(*a*) The Local Government (Municipalities) Ordinance, 1928.

(*b*) The Local Government (District Councils) Ordinance, 1928.

(*c*) The Local Government (Rating) Ordinance, 1928.

(*d*) The Public Health (Amendment) Ordinance, 1928.

The first two of these Ordinances arrange for the establishment of Local Government Authorities in towns and in rural districts of the settled areas respectively and define the powers and duties of these authorities. The authorities established under the first Ordinance will be termed Municipal Councils or Municipal Boards and those established under the second District Councils. Municipal Councils will in all cases be public health authorities while Municipal Boards and District Councils may become public health authorities under certain conditions. These Ordinances also set up Central Authorities and organisations for local government purposes consisting of a Local Government Commissioner and two Standing Departmental Committees. Of each of these Committees the Director of Medical and Sanitary Services is a member. One Committee deals with municipal affairs and the others with district council affairs. By the Public Health (Amendment) Ordinance the powers of the old Central Board of Health, in so far as municipalities and districts established under District Councils are concerned, are transferred to the appropriate Standing Committee. The administrative reform which has thus been inaugurated is of fundamental importance, but though the legislation was passed in 1928 and authorities for some areas were established during the year it will be some time before the reorganisation which has been commenced will come into effective operation and before either the central or local bodies will have had an opportunity of giving full consideration to the many public health reforms which are urgently required both in urban and in rural areas of the settled districts.

PUBLIC HEALTH ADMINISTRATION—LOCAL GOVERNMENT ORGANISATION IN THE NATIVE RESERVES.

The Public Health (Amendment) Ordinance referred to above, in addition to dealing with certain matters affecting municipalities and districts in the settled areas, embodied a clause which affects an important reform in connexion with public health administration in the Native Reserves. As the law now stands the District Commissioner alone and not, as formerly, the District Commissioner and the Medical Officer of Health is the local public health authority in each Native Reserve district.

An Ordinance dealing with the registration of births and deaths was passed during the year.

Regulations.

(*a*) Rats and Mice Destruction Regulations were prepared by the Medical Department and approved by Government during the year. These Regulations were drafted on the lines of the English Act.

(*b*) The Draft Drainage and Latrine Regulations which had been under consideration for some years were finally approved by the Central Board of Health and forwarded to Government, but had not become law at the end of the year.

(*c*) On the recommendation of the Central Board of Health, blackwater fever and encephalitis lethargica were added to the list of notifiable infectious diseases and measles and whooping cough removed therefrom.

EXTRA DEPARTMENTAL.

1. REGISTRATION OF MEDICAL PRACTITIONERS AND DENTISTS.

The Ordinance governing registration came into force on the 24th September, 1910.

Since that date and up to the end of the year the following have been placed on the Register :—

Registered Medical Practitioners	235
Licensed Medical Practitioners	6
Dentists	21

One hundred and eighteen medical practitioners were registered for Government service, and one hundred and seventeen as private practitioners.

In 1928 twenty-seven new entries were made in the register, two dentists, sixteen private medical practitioners and nine members of the Government Medical Service. Of the new private practitioners seven had gained their diplomas in India.

The Board nominated for the purposes of the Ordinance consisted of :—

The Director of Medical and Sanitary Services (Chairman),
Dr. A. R. Paterson,
Dr. C. J. Wilson, M.C.,
Dr. W. H. Kauntze, M.B.E.,
Dr. A. J. Jex-Blake,
Dr. R. W. Burkitt.

Two meetings were held during the year.

2. THE DRUGS AND POISONS ORDINANCE, 1909.

This Ordinance controls the licensing of chemists and druggists as well as the sale of poisons throughout the country.

Fifty-nine names have been placed on the Register since the introduction of the Ordinance to the end of 1928.

The Board appointed under the Ordinance consisted of the following :—

The Director of Medical and Sanitary Services (Chairman),
Dr. A. R. Paterson,
Dr. C. J. Wilson, M.C.,
Dr. W. H. Kauntze, M.B.E.,
A. A. White, Esq., M.P.S.,
L. A. Howse, Esq., M.P.S.

Four meetings were held during the year.

The recommendation referred to in the Report for 1927 that the clause in the Drugs and Poisons Ordinance, 1909, relating to local examination should be repealed was given effect to by the Drugs and Poisons (Amendment) Ordinance, 1928. In future no local examinations will be held.

No licence to act as a druggist will be granted to any person unless such person shall satisfy the Board that he is a duly qualified chemist and druggist in the United Kingdom of Great Britain, Ireland or Northern Ireland, or holds a certificate or diploma of competency as a chemist or druggist from any college, society, council or board recognised by the Pharmaceutical Society of Great Britain.

3. THE PUBLIC HEALTH ORDINANCE, 1913.

The Board established under this Ordinance deals with proposals for the sub-division into building sites of land in the neighbourhood of townships. Seven meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix " A ".

4. THE PUBLIC HEALTH ORDINANCE, 1921.

Under this Ordinance there is established a Board—The Central Board of Health—with the Director of Medical and Sanitary Services as Chairman. The function of the Board is to advise the Governor on any matter affecting the public health.

Four meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix " B ".

FINANCIAL.

The total of the sanctioned estimates for the Medical Department for the year 1928 was £210,066, an increase of £11,801 over the previous year.

The total for personal emoluments was increased by £5,004 to allow for the appointment of two additional medical officers, three sanitation officers, five nursing sisters, a laboratory assistant, a junior European clerk, and a non-European clerk, The comparative table of the sanctioned estimates and expenditure of the Medical Department for the past three years is as follows :—

YEAR	Sanctioned Estimates	Sanctioned Extraordinary Estimates	Total Sanctioned	Actual Recurrent Expenditure	Actual Extraordinary Expenditure
	£	£	£	£	£
1926 ..	178,964	1,000	179,964	160,654	Nil
1927 ..	193,265	Nil	193,265	180.227	Nil
1928 ..	204,801	5,265	210,066	195,161	4,141

The following new votes appeared :—

Training of African women	£500
Contribution to Seamen's Hospital	20
Cleaning of Crown Lands, Nairobi	50
Fees for Private Practitioners—Treatment of dental and eye defects	500
Grants in Aid, Indian and African Child Welfare and Maternity Centres	1,650
Total ...	£2,720

The actual expenditure in the year was £10,764 less than the sanctioned total.

The revenue collected amounted to £22,780 against £21,197 in 1927.

Of the total estimated expenditure in 1928 of £2,840,197 for the Colony and Protectorate, £210,066 represented expenditure on Public Health and Medical Relief, a ratio of 1 to 13.52 or 7.39 per cent.

Detailed returns of the revenue and expenditure are given in Table II at the end of the report.

PUBLIC HEALTH.

One facet of the public health problem has been brought prominently to notice in 1928. During the year epidemics of malaria occurred in the Plateau and Trans Nzoia, both centres of European settlement and in the South Lumbwa, Kisii and Nandi districts. The administrative centre of North Kavirondo, Kakamega, was also badly affected. It will be remembered that Kakamega was chosen as a site for headquarters to replace Mumias abandoned on account of its reputation for malaria and blackwater. The mortality in Lumbwa was considerable and emergency measures had to be adopted both there and in Nandi. The records do not show that Lumbwa and Nandi have previously been affected with malaria to any extent though the disease was almost certainly present. The outbreak in the settled areas caused considerable alarm. The value of land was said to have dropped as a result of the health conditions. The position was undoubtedly serious and dislocation of business occurred, but although tragedies have to be deplored something good has emerged. There has been an acceptance of the fact that malaria exists and that it is a factor of economic importance. The population is now willing and anxious to adopt, and to spend money on, measures which will lead to an improvement of the public health generally of which malaria is but one manifestation. Hitherto there has been a tendency to disguise or deny the presence of malaria. Government also has realised that malaria cannot be dealt with as a matter apart from other aspects of the public health problem and money has been voted not only for an increase during 1929 in the medical services in the areas more severely affected by malaria in 1928, but for a general increase throughout the Colony. It has been recognised that measures designed to reduce the menace of malaria must not be aimed solely at the districts where the disease has manifesed itself most acutely but must be part of a general programme affecting the country generally. The position is not one for misgiving. If Government, local authorities and individuals unite, as they appear to be willing to do, in a campaign of amelioration of conditions the future is assured, but effort must be continued and general.

The collection of information regarding the physical and pathological condition of the inhabitants of the Reserves has been pursued during the year. The treatment campaign against anchylostomiasis which was carried on in the Digo Reserve included the recording of the details observed in the examination of individuals. As a result, we have a detailed picture of the state of the public health in one of the Native Reserves. The findings, which indicate a serious position of affairs, are summarised in Appendix " C " to this Report. The recorded information will allow an accurate estimate to be arrived at in the future of the results of public health measures. In Reserves, other than Digo, the amassing of figures from which statistical findings can be deduced must be a long process, especially as the officers concerned are required to undertake all the multifarious duties associated with medical charge of sometimes a quarter of a million people. The findings to date indicate, however, that the state of the public health in the Reserves is generally at a low level and that the descriptions given in former reports are not unwarranted. The diseases which predominate vary in the different localities but the general picture is that of a population whose efficiency is seriously impaired. Helminthiasis with anchylostomiasis especially prominent near the Coast is general. Yaws or syphilis are the predominant features in some of the locations. In others, malaria infection, as judged by spleen and parasite rates, is high. Outbreaks of plague are normal occurrences in large areas. Some of the diseases which are commonly met with can be controlled by measures of treatment of individuals, but the problem as a whole will not be solved unless there is a general improvement in the conditions of living. The results which have been attained in Europe in the improvement of the public health will be attained in Central Africa if a similar course of action is followed. The problem is in some ways simpler in Africa than in countries of an established civilisation, in that there are no established native cities and the population is largely without prejudices or deeply rooted customs and habits of life. An enormous change is taking place in every aspect of native life in the Reserves and it can, without doubt, be guided and directed. There is practically a clean slate. It remains to see what may be written. Education, the term is used in its broadest sense, is the chief weapon in the fight against insanitary modes of living. Without a knowledge of the methods of avoiding disease, and this includes the adoption of a better dietary, the production of better food crops, the building of better houses and all the allied problems, the labours of medical officers in reserves will largely be in vain. The progress of the anchylostomiasis campaign on the Coast is referred to elsewhere. The methods by which success has been obtained are perhaps not the least important aspect of the operations. The people have been told the whole history of the disease with which they were afflicted. Object lessons have been given in every centre and to almost every individual, and thereby methods of prevention have been understood. The result, if it is only measured in terms of pit latrines, is a considerable step up the ladder of civilisation. But, efforts have not stopped short at the installation of a primitive system of sewage disposal. Improved housing is being instituted. The methods which have been pursued in Digo will prove successful elsewhere. The interest taken by natives at the health exhibits, which are demonstrated by trained natives at agricultural shows in the Reserves, and in an amateur cinematograph film prepared locally is sufficient warranty. There need be no fear that the money which was voted for " Propaganda " in connexion with the 1929 Estimates will be wasted.

It has to be remembered that economic prosperity and the state of the public health are so closely inter-related that they are inseparable. Without an improvement in economic prosperity it is very doubtful whether any considerable permanent improvement in the public health can be effected. The converse is also true. It follows that improvement can only come about as a result of a general policy of development in which every activity of Government is concerned.

It has been emphasised in previous reports that there can be no " dual policy " in connexion with public health and that the general standard must largely be governed by the standard of the native population. Development in the Reserves will not be at the expense of development in the settled areas. A general improvement in the living conditions of employed labour would be a necessary corollary to an improvement in the Reserves, but the employer would be fully repaid for his expenditure in a better return for the money expended on the employment of labour.

During the year a scheme for the closer settlement of Europeans was published. A considerable public health problem is raised. It will be necessary to ensure that the new assisted settler will be in a position which involves at least no declension from his former status of civilisation. The scheme demands the fullest consideration before effect is given to the proposals.

MAJOR ENDEMIC AND EPIDEMIC DISEASES.

1. MALARIA.

In 1928, as previously in 1926, an outstanding feature of the year with regard to the incidence of communicable disease was the occurrence of a number of severe outbreaks of malaria in certain parts of the highlands of the Colony. In all, six districts were affected, four being native reserves and two European farming areas or "settled districts." Of these areas the two settled districts had been affected to some extent by the epidemic of 1926 while the four native reserves, so far as we know, had not previously suffered from malaria in epidemic form. The distribution of epidemic malaria in 1928 was therefore somewhat different from that which pertained in 1926. In 1926 the most serous incidence occurred in the central highlands. In 1928 the central highlands were not seriously affected and the incidence of severe epidemic malaria was confined to the north western highlands, that is, to the more or less continuous stretch of high land which lies to the north west of the Great Rift Valley and between that valley and the basin of the Victoria Nyanza. With regard to the particular conditions which may have been responsible for the occurrence in native reserves of severe epidemic malaria in 1928, but little information is available since no entomological survey has yet been carried out in any of these areas and no special staff could be spared to carry out detailed investigations during the course of the outbreaks. In the case of all the affected native areas the outbreaks had been preceded by several months of more or less severe drought and some degree of food shortage had been experienced. In the Lumbwa area a very unusual increase in the number of mosquitoes had been recorded.

With regard to the epidemic which affected the settled districts of the Uasin Gishu and the Trans Nzoia more information is available since a certain amount of entomological investigation had previously been carried out and more was known with regard to the constitution of the population. In the Uasin Gishu and the Trans Nzoia both Anopheles costalis and A. funestus occur. Both districts up to about ten years ago were only sparsely populated.

In the course of development the districts have come to be occupied by a considerable population which is composed partly of European farmers and partly of native employes. Of these employes some have been recruited from areas in which malaria is not endemic and are therefore non-immunes while others come from endemic areas such as the Kavirondo districts and Uganda and are, in a large proportion of cases, malaria carriers. There was therefore in these districts both a large non-immune population and a large population of carriers. Effective anopheline transmitters of malaria were known to be present. European housing in the Uasin Gishu and Trans Nzoia is frequently of the type associated with pioneering conditions and where permanent buildings have been erected these are not generally mosquito proofed. The domestic and housing conditions of African natives on most farms are still but little different from those which pertain in the native reserves. A number of the factors necessary for the constitution of an epidemic were in existence and had been in existence for some time. In 1928 there occurred in the Uasin Gishu and in the Trans Nzoia a notable increase in the prevalence of mosquitoes and this was followed by a widespread outbreak of malaria which affected all communities. Contributory factors in the formation of this epidemic may have been the serious drought which had preceded it and which had resulted not only in a certain shortage of fresh foodstuffs but in a general state of mental and physical depression.

Preventive Measures.

Prior to 1926 action with regard to the prevention of malaria in Kenya had been limited to the execution of certain recognised anti-larval measures such as filling, draining and oiling and had been confined chiefly to the protection of township populations. Owing to the fact that no serious epidemics of the disease had occurred in the highland areas and that none of the measures with which we were acquainted were suitable for application throughout the great endemic areas comprised by the lower lying native reserves no general policy had been evolved with regard to the prevention of malaria in rural areas. Even in townships work prior to 1926 had been confined to minor measures since, partly on account of economic considerations and partly because of the comparatively low incidence of malaria, funds had been too limited to allow of major engineering projects being undertaken. Following, however, on the serious epidemic of 1926 which affected both towns and rural areas in the central highlands large financial provision, amounting to £40,000, was made with a view to improving conditions in Nairobi.

The appointment of an Anti-Malarial Works Committee for Nairobi was referred to in the 1927 Report. The following description of the work which was effected during the year under review is extracted from the report of the medical officer of health :—

> "The Committee first sat in January, 1928, and has continued to hold meetings at intervals of a few weeks throughout the year. As a result of a year's work the numerous murrum pits which were scattered throughout the Municipality and which have in the past provided for anopheline mosquitoes ideal breeding places difficult to control, have been filled or drained. The stream running through the valley close to 1st Avenue, Parklands, and though the City Park has been re-aligned and canalised throughout a considerable portion of its length. The filling of the quarries at Pumwani has been undertaken and at the close of the year was well on towards completion. A scheme has been prepared for the canalisation of the stream rising in Government House grounds and running down the valley to Kirk Road and thence behind the Treasury through Kenya and Uganda Railway land to the Ngong River. All these works have required extensive preliminary investigation and the preparation of the schemes has occupied considerable time, so that the work actually completed does not give a true indication of what has been done. The Committee has been much handicapped by the fact that as a body with no statutory position they possess no actual powers and all works attempted must be carried out with the consent of every plot owner affected. Negotiations of this nature have delayed the prosecution of the programme of work."

An important recommendation to the effect that a special anti-malaria engineer should be obtained was made to Government by the Committee. The recommendaion was accepted and an officer was obtained by secondment from the Federated Malay States.

The terms of reference of the Nairobi Anti-Malarial Committee definitely excluded the swamp situated in the proximity of the most densely populated areas of the town. The danger of a serious outbreak of malaria remains in Nairobi as long as this swamp continues in existence.

In the year under review the occurrence of further severe outbreaks in the settled areas has again focussed attention on the question of prevention. As a result, the necessity for the formulation of a general anti-malaria policy has been widely recognised and a notable advance in thought has been achieved. It has become more generally appreciated that no policy is likely to be successful unless it is aimed not only at the prevention of malaria but at the general improvement of the health and living conditions of all sections of the community. With a view of initiating the policy a number of recommendations were made to Government during the year and were given effect to in Estimates for 1929. Briefly the recommendations were as follows :—

(*a*) The appointment of two farm medical officers who would be responsible for investigating conditions in the rural settled areas and carrying out personal propaganda with regard to the measures necessary for safeguarding the health both of European farmers and their native employees.

(*b*) The establishment of medical units and hospitals in three native reserves which are at present without medical attention.

(*c*) The posting of additional medical officers in four native reserves in which the provision of medical officers is at present inadequate.

(*d*) The provision of funds for propaganda with special reference to the improvement of housing conditions in the native reserves.

(*e*) The provision of additional facilities for entomological investigation.

Provision was also made in Estimates for the execution of further engineering projects in some of the up country towns and for obtaining the services of an expert.

The action which was taken in 1928 with regard to the outbreaks which eventuated consisted in the appointment of two special mosquito gangs, each under a trained European overseer, for work in the Uasin Gishu and Trans Nzoia districts in connexion with a mosquito survey and the collection of information on which future action can be based. Further, the posting in advance of the arrival of new staff was made of a medical officer to carry out the duties outlined in (*a*) above. All that could be done in the affected reserves was the detachment of medical officers from their duties elsewhere for the purpose of organising and superintending the distribution of quinine on a large scale.

2. BLACKWATER FEVER.

The returns of cases of blackwater fever for the past six years are as follows :—

	Cases.	*Deaths.*
1923	27	6
1924	20	9
1925	50	11
1926	52	16
1927	34	7
1928	35	13

Fifteen of these cases with five deaths occurred among Europeans. Mombasa, Nairobi and Kisumu returned 9, 8 and 5 cases respectively.

As blackwater fever is not yet a notifiable disease the figures given above refer only to cases treated by Government medical officers. No record is available with regard to cases treated by private practitioners.

3. PLAGUE.

(1) Incidence of the Disease.

A total of 561 cases of plague were reported during the year. In those native reserves in which this disease is endemic numerous outbreaks of plague occurred, but in no case did the disease assume serious epidemic proportions, and so far as is known there does not appear to have been any extension of the disease into areas hitherto free.

In the settled areas the incidence of plague was very low and was confined to a few sporadic cases which occurred in the coffee-growing district of Kiambu. From the important maize-growing district of Nakuru in which a large outbreak occurred in 1927 no cases were reported.

In the towns cases of the disease were detected as follows :—

Nairobi	26 cases.
Mombasa	4 ,,
Eldoret	1 case.

In Kisumu for the second year in succession no case occurred.

Nairobi.—Of the 26 cases which occurred 21 were Asiatics and 5 were Africans. Fifty-one plague infected rats were found and there was a close relation between rat and human plague in the effected localities. Though the number of cases which occurred is much smaller than the number in 1927, namely, 70, it is of importance that the fact should not be overlooked that it is unsatisfactory that in a modern town outbreaks of plague should occur at all and that such outbreaks are evidence of unsatisfactory sanitary conditions. The removal of these insanitary conditions since it will involve slum clearance is expensive but it is important to realise that by no other means can plague be abolished from the town.

Mombasa.—During the year 4 cases of plague occurred. The outbreak took the form of sporadic cases occurring over a period of five weeks in September and October. No evidence of rat infection was found in connexion with any of these cases. During the whole period although extensive ratting was carried out in suspicious areas only two infected rats were found.

Eldoret.—One case of plague occurred in this town during the year. The case is of interest in that it occurred in a native who was stated not to have been away from Eldoret for many months, while no infected rats could at any time be found and plague has never been known to occur in the area.

(2) Anti-Plague Measures.

The numbers of rats destroyed in the larger townships were as follows :—

	1925.	1926.	1927.	1928.
Nairobi	19,908	46,827	137,116	59,482
Mombasa	19,291	40,014	39,241	32,596
Kisumu	4,087	10,255	16,291	20,337

The rat destruction campaign was also continued in the North and Central Kavirondo Native Reserves. The totals for the year are given in the attached tables.

The Laboratory issued 46,222 doses of plague vaccine during the year.

RAT DESTRUCTION RETURN—CENTRAL KAVIRONDO DISTRICT, 1928

LOCATION.	Chief.	Huts.	NUMBER OF RATS.												TOTAL.	
			January	February	March	April	May	June	July	August	September	October	November	December	Number of Rats	No. per Hut
SAMIA	Makudi ..	12,692	14,190	17,700	..	24,700	14,100	19,730	3,310	7,560	..	9,200	12,300	..	122,790	9·6
N. UGENYA	Muganda ..	8,191	..	5,450	1,900	9,010	5,240	1,570	1,710	..	..	..	..	..	24,880	3·0
S. UGENYA	Ndonji ..	2,276	1,900	7,510	..	2,150	..	..	..	..	..	..	..	..	11,560	9·4
N. GEM	Ogada ..	8,628	..	1,710	..	2,236	10,436	1,683	590	1,640	1,060	1,130	2,990	..	23,475	2·7
S. GEM	Ndeda ..	6,199	2,100	770	840	740	710	..	1,200	1,445	1,140	460	..	..	9,405	1·5
ALEGO	Ngonga ..	16,158	2,940	..	1,400	..	3,920	..	..	..	..	..	..	..	8,260	0·5
SAKWA	Olulo ..	5,156	..	..	..	..	..	..	560	160	..	90	..	..	810	0 1
NYOMA	Nathan ..	4,294	..	..	..	2,000	2,710	..	..	..	..	..	..	..	4,710	1·0
ASEMBO	D. Odindo ..	5,733	..	..	..	..	440	350	140	120	1,319	210	..	..	2,579	0 4
SAGAM	J. Orau ..	1,829	..	..	..	..	..	..	..	..	..	3,659	..	..	3,659	2·0
S. TIRIKI	Chewya ..	2,232	6,200	6,880	4,100	3,800	3,700	2,600	..	4,800	4,290	10,728	16,420	15,320	78,838	35·3
KADIMO	Ogutu ..	2,229	..	..	..	..	..	2,940	1,260	300	..	204	..	..	4,704	2·1
		75,617	27,330	40,020	8,240	44,636	41,256	28,873	8,770	16,025	7,809	25,681	31,710	15,320	295,670	..

RAT DESTRUCTION RETURN—NORTH KAVIRONDO AND NANDI RESERVES, 1928

LOCATION.	Chief.	Huts.	NUMBER OF RATS.												TOTAL.	
			January	February	March	April	May	June	July	August	September	October	November	December	Number of Rats	No. per Hut
WANGA	Mumia ..	8,102	1,400	370	1,500	1,200	6,717	915	930	..	840	..	..	..	13,872	1·7
MARAMA	Mulama ..	8,112	12,53	1,494	..	355	1,289	..	1,160	2,289	662	1,220	1,112		10,834	1.3
KISA	,, ..	1,518	..	..	..	..	..	..	..	..	269	350	..	..	619	0·4
BUNYORE	Zakai ..	9,518	15,253	14,097	15,382	9.560	5,126	16,594	5,944	16,501	11,746	23,023	2,3010	12,740	168,976	17·7
E. KAKAMEGA	Osore ..	2.966	1,413	4,770	..	3.755	1,604	2,445	2,016	7,370	..	2,346	..	..	25,719	8 6
W. KAKAMEGA	Mulimo ..	5,636	1,645	..	..	..	..	..	12,310	..	..	..	..	2,730	16,685	2 9
WATSOTSO	Mutsembo ..	1,900	1.339	1.700	2,983	..	880	..	7.401	..	..	..	7,769	10,500	32,572	17·1
MUKULU	Ropando ..	1,783	1,200	1.200	1,200	1,200	..	1,200	4,940	1,100	1,160	..	1,200	1,200	15,600	8·7
KAKALELWA	Ndombi ..	1,741	1,890	1,840	..	..	..	1,432	1,467	1,392	1,687	1,900	1,360	..	12,968	7·4
KABRAS	Mwanza ..	2,738	..	..	..	..	..	..	..	..	489	..	..	..	489	0·1
S. KITOSH	Sudi.. ..	6,965	7,021	1,610	6,843	10,202	1,089	..	307	13,135	2,525	1,064	1,936	1,422	47,154	6·7
N. KITOSH	Murunga ..	9,333	..	..	2,229	..	895	..	..	..	1,399	..	..	758	5,281	0·5
MARACH	Oduyo ..	4,179	..	..	..	..	..	..	..	..	..	..	..	2,240	2,240	0·5
OHAYO	Ezakia ..	4,931	..	5.056	7,300	6,090	7,834	3,755	5.400	9,300	5,610	4,210	5,700	5,250	65,505	13·2
WAHOLO	Were ..	2,414	2,586	585	..	658	..	..	..	628	2,451	..	..	..	6,908	2·8
WAMIA	Nyasata ..	6,397	..	9,680	..	..	..	..	..	..	5,650	..	3,592	..	18,922	2·9
TIRIKI	Amiani ..	4,858	17,490	11,900	..	5,000	1,834	..	15,300	4,630	..	3,970	1,1620	..	71,744	14·7
WOOIDAKHO N. MARAGOLI }	Odanga ..	10,147	26,600	13,531	11,960	12,967	12,927	8,120	4,631	13,141	11,314	11,517	13,286	11,805	156,799	15·4
S. MARAGOLI	M'Nibie ..	6,287	..	8,890	..	..	7,500	..	13,223	..	4,560	5,999	..	4,530	44,702	7·1
KAKAMEGA TOWNSHIP ..	.. ..	..	130	143	149	155	176	175	151	193	138	78	159	188	1,835	..
		99,721	79,220	76,866	49,546	51,142	52,871	34,636	75,180	69,679	50,500	55,677	70,744	53,353	719,424	..

4. TRYPANOSOMIASIS.

While no special medical officer was detailed for work solely in connection with sleeping sickness, the treatment of cases of this disease was undertaken by the medical officers of South and Central Kavirondo. Hospital accommodation was provided by the Native Hospitals at Kisii and Kisumu and also by the Mission Hospital at Maseno. In both Central and South Kavirondo cases were seen and treated in the course of the usual itineraries of the medical officers. District reports show that a total of forty-four cases, with five deaths, came under observation and were treated.

A European woman, who had been ill for between two and three months, was admitted to the European Hospital, Nairobi, in an almost comatose condition. The blood was full of trypanosomes, and death occurred the next morning. It appears that the infection was contracted in Tanganyika Territory.

The records of cases seen and treated during the year must not be taken as affording an indication of the prevalence of the disease. Patients in the early or late stages of the disease do not as a rule report for treatment. It has also to be remembered that the locations where sleeping sickness occurs are, as a rule, remote from administrative or other centres.

It has not been possible to carry out any further investigations by means of census operations as regards the incidence of sleeping sickness. It is anticipated, however, that it may be possible to detail an officer for a re-investigation during 1929.

No recommendations for the control of the disease, additional to those put forward in 1927 to the Administration, were made during 1928. Difficulties have occurred in carrying out the measures proposed for adoption at Uyoma and Seme.

The general question of the control of sleeping sickness has been under discussion with the Government of Uganda during the year.

5. RELAPSING FEVER.

The number of cases of relapsing fever which were reported in 1928 remains at approximately the same total as in 1927. The actual figures are 71 and 79 respectively.

Meru again shows the largest number of cases. Most of the cases occurred on the traffic route from Meru to Nairobi.

One labour camp near Meru was found to be infected and was burnt, and a new site selected.

Treatment by injections of N.A.B. was given, and few relapses were observed.

No carrier other than *Ornithodorus moubata* has been implicated. The tick has been reported from North Kavirondo.

6. DENGUE.

Twelve cases of dengue were reported for the year. All the cases occurred in natives.

7. YAWS.

The number of patients treated in hospitals for the year is 12,531. Eleven deaths occurred. The recorded cases treated at out-dispensaries and by medical officers on tour number 73,086. In addition, there is no doubt that several thousand cases of which no definite diagnosis was recorded received treatment at dispensaries.

The records for the last six years are as follows :—

1923	64,344
1924	45,527
1925	50,584
1926	66,883
1927	70,253
1928	85,617

The disease would appear to affect the agricultural rather than the pastoral tribes, and generally speaking the denser the population the greater the incidence of the disease.

General opinion is to the effect that the incidence of the disease has been definitely reduced in the Kikuyu District. No figures exist relating to incidence except in the Digo Reserve, and it is impossible to make any definite statement. There is considerable doubt as to whether, apart from Kikuyu, any marked progress has been achieved.

In the Digo District the examination of 30,600 adults and 22,000 children showed 69 and 521 cases respectively of infective yaws. Individuals of the same population who were diagnosed as affected with tertiary yaws numbered 2,144 and 1,732.

Medical officers report a larger number of recurrent cases whose histories indicate that previous injections have been given.

As with syphilis, it is almost impossible to induce patients to attend for more than one or two injections. Endeavours made by medical officers to induce re-attendances are largely without effect, but it has been found that the percentage of re-attendances is increased if time can be spared to spend two or three weeks in the same location.

A certain amount of evidence has been presented which may indicate that a single injection, though it may produce immediate good effects, is, in the end, harmful and leads to increased difficulty in obtaining permanent results.

The control of the disease under present conditions bristles with difficulties. A large staff is necessary to deal with mass treatment, and the continuous observation of the infected. Education, propaganda, the inculcation of the principles of hygiene in elementary schools, the instruction of elders and headmen in the course, treatment and prevention of the disease, are to be considered the " shock tactics " to be employed in combating the scourge.

The drug which has been used almost exclusively for treatment has been bismuth in one form or another. The salts which have been used have not proved altogether satisfactory, though reports vary very much. The pain and swelling which frequently occur after injections are stated to have a bad effect on re-attendances in some districts. Stomatitis has been reported as occurring with more frequency than in the past. In practice, it has been found that bismuth salts, if given in 25 per cent. suspension of glucose instead of in water are accompanied by less painful after-effects. Massage at the site of injection has been reported as of use.

A preparation of metallic bismuth in 1 per cent Phenol, which was made at the Research Laboratory, Nairobi, was tested. No pain or swelling occurred on injection, and over a series of 238 cases no cases of stomatitis were observed.

Carman, in his investigations on the treatment of yaws and syphilis which were published in the Kenya and East African Medical Journals of September and October, 1928, came to a number of interesting conclusions, among which were :—

1. That none of the bismuth preparations could be said to take the place of the synthetic arsenicals; that after twelve injections of any of the preparations tried a large percentage of cases were left with positive serum reactions.
2. That the bismuth compounds cannot be relied upon to have a definite chemical composition, in consequence of which they are apt to give rise to severe local symptoms.
3. That reduction in serum reactions may be expected to go on after treatment with precipitated metallic bismuth has stopped.
4. That metallic bismuth causes the least pain and has the most sustained action.
5. That metallic bismuth, when administered by African dressers, requires supervision.

With regard to the clinical diagnosis, the majority of cases complaining of pains in bones and joints give an indubitable history of yaws. It is a fact, however, that false histories are often given for the purpose of obtaining a coveted injection. Statistics obtained by African dressers are therefore unreliable.

Very few primary cases are seen, but it is interesting to note that the scarifications made by natives for the relief of pains have in certain instances been observed to be the seat of primary sores.

8. SYPHILIS.

The total number of cases treated during the year was 24,442, as compared with 17,054 for 1927.

The figures for the past six years are as follows :—

1923	6,532
1924	11,492
1925	13,581
1926	16,218
1927	17,054
1928	24,442

The total figure includes cases diagnosed by native dressers, and cannot therefore be regarded as absolutely accurate. A considerable increase is recorded from Central Kavirondo, where the system of regular visits to dispensaries and longer stays in the different locations has produced good results.

In Central Kavirondo the two diseases which may be considered as outstanding problems and which cause the greatest disability are undoubtedly yaws and syphilis. The difficulties in dealing with the situation are again emphasised in reports from medical officers. The lethargy displayed by the natives in failing to apply early for treatment is pronounced, and unless disabilities are present, such as sterility, miscarriages, gross lesions, etc., they cannot be persuaded to re-attend.

In townships, where treatment centres and clinics are being established, the tendency is for more and more persons each year to seek treatment.

Increase of qualified staff is required in the native reserves to allow medical officers to spend full time on a census of infected persons and their treatment. Higher trained and better educated native dressers will assist in combating the disease and obtaining more reliable statistics.

Propaganda plays an especially important part among natives, both in the reserves and in the settled areas, and its value cannot be overestimated.

The drug mainly used in treatment has been sodium bismuth tartrate. The disadvantages associated with the bismuth salt which is supplied at present have been described in the section relating to yaws. Increasing resort is being made to Novarsenobillon, as being more generally preferred by and attractive to patients. In Kavirondo money has been voted by the Local Native Councils for the purchase of the drug.

It is still noticeable that the centres in the Kikuyu Province, all of which report very large numbers of cases of yaws, return very small figures for syphilis. A similar position seems to obtain in Digo, where only 22 cases of syphilis were encountered in an examination of 52,000 people.

The new ward for the treatment of cases of venereal disease at the Infectious Diseases Hospital, Nairobi, was completed and taken into commission early in the year. A very great and needed improvement has resulted.

9. LEPROSY.

Five hundred and forty-seven cases of leprosy came under observation or were treated during the year, of which 119 were remaining from 1927 in hospitals or settlements.

At Kakamega a small sum of money was provided for improving the leper accommodation, and 18 huts, approximately 24 feet by 12 feet, were erected in the form of a hollow square. Here are housed some 80 lepers, who come from all parts of the country and who are running a community of their own under their own leper headman. A trained leper acts as a dresser, and each man capable of cultivating land is given a small area for the purpose.

No compulsion is exercised, and the able-bodied lepers can earn a few cents a day by doing extra work. Treatment is chiefly by Alepol.

There is no question but that this little colony is a very successful one, and by giving the lepers an interest in life their mental outlook and moral standard has been considerably improved. Reluctance to reside in the colony is disappearing.

The old established colony at Malindi in the Coast area accommodates some 72 lepers, male and female.

At Kisii, a few huts are attached to the native hospital for the treatment of lepers. Here " protein shock therapy " is being given a trial. The following is a short account of the method employed :—

Four c.c. of condensed milk are dissolved in 12 c.c. of sterile distilled water, to which is added one grain of antimony tartrate. This is given intravenously. A very sharp reaction occurs almost immediately, but in half to one hour's time no after effects are observed, with the exception of a rise in temperature some six hours after injection. It is stated that the skin lesions become whitish and scaly, desquamation takes place, nodules tend to shrivel up and become reddish in colour, leprous ulcers heal rapidly.

At the same time, all intercurrent diseases, including helminthiasis, are treated.

The treatment is said to be very effective, but as it has been tried only recently it is too early to make any definite statement. Patients come up volunarily for further injections.

A small colony, accommodating ten patients at the end of the year, exists at Mkunumbi, near Lamu.

Treatment centres are provided at Mombasa, Nairobi, and at some mission hospitals, notably Chogoria Church of Scotland Mission.

Opinions vary as to the incidence of the disease, and until accurate figures can be obtained any statements must be of a conjectural nature. It is reported from Malindi that a considerable number of cases exist in the Reserve. On the other hand, a survey in the Digo District showed only 32 cases among 52,000 people examined. No new facts as to incidence have been brought to light elsewhere.

Little progress was made during the year with regard to the selection of a suitable site at the Coast for a leper settlement. The difficulty in finding reasonably fertile land with a good water supply, conveniently situated for access but in not too close proximity to existing towns and villages, remains. At the close of the year a site was suggested in the Digo country, south of Mombasa; it will be investigated.

10. SMALLPOX.

Only five cases of smallpox came to notice in the Colony and Protectorate during the year. Two of these occurred in Mombasa; the first in an Indian woman, the second in a contact of the same. The source of infection in the first case could not be traced.

Three cases occurred in Nairobi; an Indian, his child, and an African employee of the family. The source of infection could not be traced.

Vaccination.

In addition to routine vaccination of prisoners, police, military, and labour recruits, and children at welfare centres, vaccination was carried out in one of the large Kavirondo Native Reserves, where a mobile vaccination team, under the supervision of a European sanitary overseer, was maintained throughout the greater part of the year, and over 158,318 of the general population were vaccinated.

The total number of vaccinations performed during 1928 was 617,460.

11. PNEUMONIA.

The figures for admissions to the hospitals and deaths during the past five years is as follows :—

Year.	*Admissions.*	*Deaths.*	*Death rate per* 100 *cases.*
1924	1,036	178	17.1
1925	975	185	18.9
1926	1,265	255	20.2
1927	1,301	279	21.4
1928	1,314	362	27.5

It will be noted that while the total for admissions remains at about the same level as in 1927, the death rate has continued the upward tendency which had previously occurred.

Pneumonia continues to maintain its place as the most killing disease which is met with in hospital practice. Of the total number of deaths which occurred at the Government Hospitals, 27.4 per cent. is due to pneumonia.

In Nairobi, out of a total number of 685 deaths reported, 292—42.6 per cent.—were due to pneumonia. The comparative table of the special death rate for pneumonia per 1,000 living in Nairobi is as follows :—

1926	5.2
1927	6.9
1928	7.6

The occurrence of meningitis appears to be a relatively frequent complication of pneumonia among natives. In 74 post-mortems on native cases of pneumonia, meningitis was discovered in 13; another evidence of a lack of resistance to the local strain.

12. TUBERCULOSIS.

The number of cases treated during 1928 is only slightly increased as compared with those of the previous year. The actual figures are 657, as against 634.

There is little doubt that the figures of cases attending at Government hospitals and dispensaries give no criterion of the actual incidence of the disease. In a population survey conducted in Digo, the examination of 3,082 adults showed 713 individuals as suffering from pulmonary tuberculosis, and 195 children out of 2,110 children examined.

In a paper compiled after a year's post-mortem work in Nairobi, and based on 176 examinations of native bodies, F. W. Vint, Assistant Bacteriologist, met with 16 cases (9 per cent.) of tuberculosis. The following remarks occur :—

> " A figure of 9 per cent. points to the fact that tuberculosis is a common cause of death. It was noticeable that healed tuberculous lesions were rare in my cases, and it was almost as rare to find fibrous tissue formation round active lesions.
>
> " The commonest form of the disease was acute miliary tuberculosis. Generally, both lungs were densely studded. Eight out of the sixteen cases had cavities, but in only two of these were the cavities larger than a small bean. In some of the cases the condition approached very closely to a tuberculous pneumonia. In one case, actual pneumonia had supervened, and in addition there was a pneumococal meningitis present.
>
> " Hæmorrhage, as a cause of death, did not appear in the series.
>
> " All the organs in the abdominal cavity except the pancreas have been found affected with tuberculosis at one time or another, but, strange to say, even in the most generalised case, no naked eye tuberculous lesion was seen in either the brain or meninges.
>
> " In one case where tuberculosis was found in the lungs, there was an old abscess cavity in the right frontal lobe of the brain. This was full of inspissated pus, and was surrounded by a well-formed fibrous tissue wall.

> "The similarity between generalised tuberculous adenitis and Hodgkin's disease can be very striking, as the following case will show. The mesenteric and retroperitoneal lymph glands were grossly enlarged, but not caseated; the individual glands had a thickened capsule, and, excluding a little fibrous tissue, were quite separate from each other, no infiltration being present. The mediastinal glands were not affected to as great an extent as the abdominal. On the left side of the neck there was a large mass of freely movable, fairly discrete glands, while those on the right side were visibly enlarged. The glands in both axillæ and in the left groin were easily palpated. The lungs showed no signs of tuberculosis and the liver and spleen were healthy. With the exception of the healthy spleen, the above is a fairly accurate description of an early case of Hodgkin's disease, yet microscopical examination showed commencing caseation with typical tuberculous giant cells round the periphery. There was no increased eosinophilia present, nor was there an increase in the fibrous tissue of the glands."

Increased accommodation in the shape of special tuberculosis wards is being provided in some of the native hospitals, and the provision of better facilities for treatment is being undertaken.

Pulmonary tuberculosis is the most common form of the disease, next in order being glandular, then surgical tuberculosis and lesions of the skin.

Early cases are rarely seen and patients usually present themselves when the course of the disease has become well marked.

Among the Masai, whose diet is principally blood and milk, a few cases of miliary tuberculosis were observed.

Improvement in the incidence of tuberculosis is unlikely to take place until a corresponding improvement takes place in housing and sanitary conditions in general.

13. CEREBRO-SPINAL FEVER.

Thirty-six cases with nineteen deaths were reported for this year, as compared with forty-one cases and eighteen deaths reported in 1927.

No epidemic occurred.

14. ANTHRAX.

The number of cases of this disease was sixty-nine, with two deaths, as compared with fifty-one cases with seven deaths for 1927.

An outbreak occurred in one location in the Meru District, thirty-five cases being treated, with one death.

The mild character of cases of malignant pustule remains a feature.

15. INFLUENZA.

During the year 6,209 cases of this disease, with twelve deaths, were reported.

The figures for the last two years are as follows :—

	Cases.	*Deaths.*
1927	4,141 ...	8
1928	6,209 ...	12

The increase of cases for 1928 occurred as a result of minor epidemics. No pandemic occurred.

16. ENTERIC.

The number of cases reported for the year in the enteric group was 320, with 45 deaths, as compared with 230 and 34 deaths for 1927. Of this number, 14 cases occurred amongst Europeans.

Nairobi alone, including the prison population, accounted for 194 cases, while from Mombasa 46 cases were reported. The remainder of the cases were distributed throughout the country. There are reasons for suspecting that the figure returned from the Nairobi Gaol is not entirely correct and that the real incidence was considerably lower than was reported.

At the Native Hospital, Nairobi, out of 116 cases, 55 occurred during the quarter ending June, *i.e.*, during the heavy rainy season.

An interesting little outbreak occurred on one of the Lake steamers, and was probably doe to a contaminated drinking-water supply. The pump which pumped the drinking water from the centre of the lake had been also used to pump the harbour water for washing the decks.

A series of 14 cases at Eldoret originated from two native cooks, who were found to be carriers.

The figures for definitely positive agglutination tests, as returned by the Laboratory, show the causative infections to be :—

B. Typhosus	214 cases.
B. Para-typhosus A.	16 cases.
B. Para-typhosus B.	95 cases.
B. Para-typhosus C.	7 cases.

17. TYPHUS.

Two cases, both in Europeans, were notified in Nairobi during the year.

18. DYSENTERY.

A total of 1,069 cases, with 50 deaths, were reported from Government hospitals and institutions. In 1927, 1,021 cases, with 63 deaths, occurred.

A certain amount of dysentery occurred at the Nairobi Gaol. The monthly incidence decreased after sanitating certain labour camps in the vicinity.

A certain proportion of the cases of dysentery were due to infections by helminths such as *Schistosoma mansoni.*

District returns differentiated the cases of dysentery reported as under :—

Amoebic in origin	162
Bacillary	96
Undifferentiated	811

19. UNDULANT FEVER.

A small outbreak of undulant fever was observed in Turkana amongst the native troops in the months of April and May. Seven cases occurred, all of which terminated fatally. All the patients admitted to have been in the habit of drinking goats' milk, which was thought to have been the vector of the disease.

As a preventive measure, goats' milk was forbidden unless boiled previously. No further cases occurred.

Cases were not reported from elsewhere than Turkana.

One positive agglutination with *paramelitensis A.* was observed at the Laboratory.

20. DIPHTHERIA.

During the year a total of fourteen cases of diphtheria, twelve Europeans and two natives, came under notice. The European cases occurred in the Nairobi district, and the native at Mombasa.

The history of diphtheria in the country is of interest. Prior to 1924 no cases had been reported. The following table gives the details of the incidence of the disease since it was first detected :—

Year.	*Europeans.*	*Asiatics.*	*Natives.*	*Total.*
1924	6	2	3	11
1925	2	—	—	2
1926	—	4	1	5
1927	3	1	—	4
1928	12	—	2	14

All the cases up to the year under review occurred in or in the neighbourhood of Nairobi, but in 1928 two cases, both natives, were reported from Mombasa.

It may be taken that diphtheria is now endemic in Kenya. Whether the disease was present in the country prior to 1924 in such a mild and modified form that it escaped observation is impossible to say, but it is significant that many of the cases which are definitely diagnosed and confirmed bacteriologically cannot be traced to contact with others of a like nature. Typical cases, some of them severe, are now met with.

Repeated examinations of ulcers have been made in the past with the object of detecting some possible causal organism, but though diphtheroid bacilli are regularly observed, no case of infection with the Klebs-Loffler bacillus has been detected up to the end of 1928.

Arrangements have been concluded for the carrying out of Shick testing in connection with school medical inspection.

21. WHOOPING COUGH.

During the year 152 cases with two deaths were reported, as compared with 67 cases and one death for 1927.

Whooping cough occurs throughout the country.

22. ENCEPHALITIS LETHARGICA.

One case only occurred, and was reported from Kisii. Recovery ensued.

23. HELMINTHIASIS.

Anchylostomiasis.

The anchylostomiasis campaign in the Digo District proceeded on the lines indicated in the Report for 1927, and was completed in so far as the Digo section of the population is concerned. The result up to the end of the year was that each house in the Digo Reserve had been equipped voluntarily by its owner with a properly constructed pit latrine, and that the population numbering over 52,000 had been individually examined and treated as circumstances demanded. The method of herd treatment was not pursued.

Very considerable difficulties were encountered and had to be overcome in the course of the operations. At one time definite opposition, organised by reactionaries and witch doctors, was encountered. The cry was raised that the medicines used were in fact poison. For a time every death which occurred was ascribed to the effects of the anthelminthic. It is possible that deaths actually did occur as a result of the administration of carbon tetrachloride, but investigation of all the cases which were reported did not confirm the rumour which was abroad. The small area which was particularly hostile was known to be a centre of disaffection and unrest, and particularly noted for the intemperance of its inhabitants. The latter fact may have a bearing on the possibility of deaths occurring, though the gravest warnings as to the dangers of drink after receiving medicine were everywhere issued. It is also not impossible that medicines administered by witch doctors themselves to counteract the alleged evil effects of the white man's medicine may have been a factor in the mortality, if mortality there was. The Administrative Authorities have always been convinced of the value of the campaign, and with their help, aided by steady persistence on the part of everyone concerned, the opposition gradually died away and proceedings resumed a normal course.

The immediate sanitary effect which has been produced as an integral part of the campaign is that a distinct step forward on the part of the people has been taken. It is not suggested that the matter can now be left, and that there is no danger of retrogression. Unremitting care will require to be taken in order that the advance may be consolidated, and that the newly-acquired sanitary customs may become habits. It should be noted, however, that the latrines are in use, and their general state of cleanliness is remarkable. Re-infections will be bound to occur, and individuals will require more than one treatment, so that the treatment of hookworm will for some time continue to be a marked feature in the medical activities of the district, but a mass campaign should not again be necessary.

The immediate effects of treatment can best be judged from the extracts given below from letters received from employers of labour in the district :—

> "I think that the following facts re my labourers (Wadigo) will interest you :

" Last year and during the first six months of this year, the highest weeding and clearing task that I was able to get done by my labourers was 450 square yards per day, and this after infinite trouble. The task was done unwillingly, and the men were sulky and appeared to me to be unfit to do a fair day's work.

" On the 15th May, 1928, as you no doubt remember, I took every man to your camp, where you gave them anti-hookworm treatment.

" At the present time these same labourers are doing a task of 1,000 square yards in heavier grass and bush, and are doing it cheerfully.

" All the men appear cheerful and have energy which was noticeably absent before their treatment for hookworm.

" I attribute this better work, etc., solely to their being more or less ' fit,' which I think is due to the treatment given them, etc."

" I think perhaps the following facts will interest you : In December last year the highest task I could persuade my Wadigo labourers to do was to cut 1,000 leaves per day, which of course was not sufficient. The same Wadigo labourers, after having been treated by you for hookworm, are now cutting 2,200 leaves per day, and whereas last year Wadigo labourers for cutting sisal were very scarce, they are now plentiful.

" I also notice that the Wadigo appear to be more willing and cheerful since they have taken their anti-hookworm treatment.

" As to our Kavirondo contract labourers, I am glad to say that I notice a great improvement in general health since they were treated by you for hookworm, and I hope that you can arrange to examine and if necessary treat for hookworm our new arrivals.

" Thanking you for all the assistance and useful advice re treatment of our plantation labourers."

It might appear that the occasion is ripe for a vigorous programme of development in the area in which effort has been expended in a successful attempt to improve the physical efficiency of the population.

At the close of the year arrangements were in train for extending the treatment campaign to the Daruma section of the Digo Reserve.

In the Malindi District matters have progressed more slowly in connection with preventive and treatment measures against anchylostomiasis. Only one medical officer has been available, and his duties did not allow of full time being given to the prosecution of a definite campaign. Good progress was being made until an unfortunate incident called a halt to such systematic progress as was being effected. Seven deaths occurred in one area after administration of carbon tetrachloride and oil of chenapodium. Enquiry revealed the fact that in spite of warnings the people had adjojurned immediately after treatment to the local drinking shop where they had removed the taste with copious draughts of native liquor. Again, the witch-doctors' medicine could not be eliminated. It was decided to continue treatment only to those who applied for it. In some locations the demand was unaffected by the news of the catastrophe which had occurred. In others the demand fell away almost to nothing. Confidence will gradually be restored and matters can later proceed on more normal lines.

In the Malindi District, as in Digo, the necessity for the digging of pit latrines was made a feature of the propaganda necessary to achieve results. The effects were not so good. Less time could be given to the campaign. Drought and consequent failure of crops and water occupied the chief attention of the natives and reduced their already small supply of energy.

The information from districts other than those on the Coast corroborates previous reports, namely, that though anchylostomiasis is widespread, the infestation is not intense, and symptoms of anæmia, etc., are not generally produced.

General.

The reports which are received as to the incidence of helminthiasis continue to indicate that infestation is almost universal. The distribution of the type of parasite still varies somewhat, but no new facts have come to light. It is certain that ascaris infestation bears a prominent part in the causation of infant mortality. In one case an infant only two months only was found to harbour ascarides.

In the Teita Reserve, a small area inhabited by an intelligent and progressive people, a definite campaign against helminthiasis was undertaken on the lines pursued in the operations at the Coast against anchylostomiasis. An equally encouraging result accrued. The people accepted the reasons which were told them for the incidence of helminths, and accepted the necessity for the institution and use of latrines. Again a squad of native sanitary assistants trained in the construction of latrines and informed as to the etiology of helminthiasis proved their use. At the end of the year a system of properly-constructed pit latrines, of a depth of not less than 14 feet, had been constructed—one pit to each family group of huts. The district is fortunate in that large numbers of flat stones of considerable size are everywhere found in the numerous watercourses which exist. A more permanent type of pit top could be constructed by the use of flat stones than is possible at the Coast, where timber had to be utilised as the basis.

The prevalent parasite in the area is ascaris.

The results of an interesting investigation by an officer of the Veterinary Section of the Agricultural Department and a medical officer into the effects of helminthic infestation were published during the year in "Parasitology." It was found that infestation by tænia in boys at the Kabete Reformatory produced a definite retardation of growth. The figures are interesting and give cause for speculation as to the sum total of disability in the country caused by helminthic parasites.

Towards the close of the dietetic investigations which had been conducted it became clear that some attempt must be made to define the actual part, if any, that the toxins of helminthic parasites play in connexion with mineral metabolism. At the close of the year an experiment had been planned and commenced to ascertain the effects of helminthic parasites on calcium metabolism.

Schistomiasis continued to be found to be more widely spread than had formerly been suspected.

VITAL STATISTICS.

POPULATION.

The non-native population of the Colony was determined by census in 1926, the African population being estimated at the same time :

Population in Kenya in 1926.

Europeans	12,529
Asians (including Arabs)	26,759
Arabs	10,557
Africans (estimated)	2,515,330

A new Registration of Births and Deaths Ordinance was passed by Legislative Council during the year. Later it became evident that some amendment of this Ordinance would be required, and an amending Bill has therefore been prepared which will be introduced to Council in 1929. Until this legislation has been brought into operation the collection of accurate vital statistics will not be possible. The figures which are given below provide certain information with regard to the larger towns, but as in previous years it is again necessary to note that they should be accepted with reserve.

NAIROBI.

Health and Mortality—Vital Statistics.

A.—Population.

	Census, 1926.	*Estimated population*, 1928, i.e., 15 *per cent. increase on census figures.*
Europeans	2,442	2,809
Indians	7,618	8,761
Arabs	70	80
Others	1,369	1,574
Total non-natives		13,224
Total natives		25,000
Total all races		38,224

B.—Births.

Births were registered during the year as follows :—

Europeans	124
Asiatics	69
Others	7
Total	200

C.—Marriages.

The following are the numbers of marriages registered :—

Europeans	81
Asiatics	5
Natives	49
Total	135

D.—Deaths.

The total number of deaths from all causes and among all races reported as occurring in and around Nairobi during the year is 966, equivalent to a crude death rate of 25.11 per thousand of the population (all races), compared with 21.66 per thousand in 1927, and 22.64 per thousand in 1926.

This number includes deaths among persons brought into hospital in Nairobi from outside districts and also those where the bodies are brought into Nairobi for burial.

The total number of deaths from all causes among persons stated to be normally resident in Nairobi is 685, which yields a recorded death rate of 17.94 per thousand population (all races), as compared with 18.9 per thousand in 1927 and 20.57 per thousand in 1926.

Of the 685 deaths, 507 were among males and 178 among females.

36 deaths occurred among Europeans, equivalent to a rate of 12.8 per 1,000 Europeans.

246 deaths occurred among Asiatics, equivalent to a rate of 23.6 per 1,000 Asiatics.

403 deaths occurred among Natives, equivalent to a rate of 16.1 per 1,000 Natives.

As previously stated, no information as to the age distribution of the population is available, and thus corrected death rates cannot be obtained.

E.—Infant Mortality.

There being no complete system of registration of births, it is impossible to arrive at an infant mortality rate. The total number of deaths in infants under one year of age is 141, or 20.6 per cent. of deaths at all ages.

Infant deaths in relation to deaths at all ages.

Race.	*Infant deaths.*	*Deaths at all ages.*	*Percentage.*
Europeans	3	36	8.3
Asiatics	85	246	34.5
Natives	53	403	13.1

It is to be noted in regard to infant deaths among natives that the infant population is small, more than two-thirds of the natives in the town being adult males.

F.—General Mortality.

The disease which contributed most highly to the general death rate is pneumonia, which caused 292 deaths or 42.6 per cent. of deaths from all causes. In 1927 the figure was 240, or 37.4 per cent., and in 1926, 171, or 26 per cent.

The death rate from this disease for the year 1928 is thus 7.6 per thousand of the population, as compared with 6.9 in 1927 and 5.2 in 1926.

Tuberculosis caused 31 deaths, equivalent to a rate of 0.8 per thousand population as compared with 21 deaths (0.6 per thousand) in 1927, and 17 (0.5 per thousand) in 1926.

Malaria was given as the cause of 25 deaths, yielding a rate of 0.6 per thousand population; in 1927 the rate was 1.1., and in 1926, 3.9 per thousand.

Plague accounted for 21 deaths, *i.e.*, a rate of 0.5 per thousand population; in 1927 the number was 53 (1.5 per thousand), and in 1926, 32 (0.9 per thousand).

G.—Notifiable Infectious Disease.

During the year 368 cases of notifiable infectious disease occurring within the Municipality were notified to the Medical Officer of Health. This figure is lower by 98 than in 1927 (466), and higher by 47 than 1926 (321).

Of the total cases notified, typhoid and para-typhoid number 128, tuberculosis 61, and measles 50.

MOMBASA.

Health and Mortality—Vital Statistics.

A.—Population.

The only official figures of the population are those of the 1926 Census. These figures are undoubtedly far from correct, and with the marked increase in housing of all races it is probable that the population exceeds 50,000.

No figures have been obtained for 1928, but an estimated population was submitted by the Resident Commissioner for 1927. This is used in preparing the various vital statistics for 1928.

The population was shown in 1927 to be made up as follows :—

RACE	Males	Females	Children	Total
Europeans	562	187	136	885
Indians	4,041	2,166	1,349	7,556
Goans	598	203	141	942
Arabs	3,537	2,315	1,671	7,523
Africans	11,916	8,339	6,651	26,906
Other Races ..	120	94	151	365
TOTAL ..	20,774	13,304	10,099	44,177

B.—Births.

Compulsory registration of births is for the European population only, but figures are provided for Asiatics in addition. The importance of universal registration and notification of births must be emphasised, and until that is obtainable figures are of no statistical value.

Births registered in Mombasa during the year were as follows :—

Europeans	13
Indians	33
Goans	7
Other Races	5
Total ...	58

The figures for 1926 and 1927 are as follows :—

1926.

Europeans	16
Asiatics	41
Other Races	4
Total	61

1927.

Europeans	22
Asiatics	37
Other Races	3
Total	62

C.—Marriages.

The following marriages were registered during the year :—

Europeans	79
Arab and Mohammedan	273
Goans	9
Africans (Christian)	18
Other Races	1
Total	380

In 1927 there were 63 European marriages; in 1926, 60, and 1925, 45.

Many of the European marriages registered here are between people belonging to other districts, and the figures are consequently not representative of Mombasa.

D.—Deaths.

The number of deaths reported during 1928 is 859, of whom 497 were males and 362 females. The deaths reported amongst races were divided as follows :—

RACE	Males	Females	Total
Europeans	5	7	12
Indians and Goans	114	101	215
Arabs	93	62	155
Africans	284	189	473
Seychellois	1	3	4
TOTAL	497	362	859

Taking the estimated population as 44,177, the crude death rate works out at 19.44, as compared with 16.43 in 1927, 19.48 in 1926, and 21.2 in 1925 per thousand of the population. For various races the crude death rate works out as follows :—

Europeans	13.5
Asiatics	25.4
Arabs	20.6
Africans	17.6

The rates for 1927 are given for comparison :—

Europeans	7.91
Asiatics	26.47
Arabs	16.21
Africans	13.82

E.—Infant Mortality.

This rate, which is expressed as the number of deaths occurring in children in the first year of life per thousand births, cannot be estimated for Mombasa until registration of all births is compulsory. The total number of deaths occurring in children under one year is 191, divided among races as follows :—

Europeans	—
Indians	90
Goans	4
Arabs	43
Africans	45
Seychellois	1
Other Races	7
Total	190

It will be noted that the figures for Indians are fairly high, while the African figures are remarkably small. It is, as already pointed out, probable that all African infantile deaths are not reported to the authority.

F.—General Mortality.

No improvement has yet taken place in the system of obtaining accurate information regarding mortality rates. Deaths occurring during the year were certified as follows :—

Health Office (after inspecting corpse)	394
Native Hospital (deaths in hospital)	140
Infectious Diseases Hospital (deaths in hospital)	44
European Hospital (deaths in hospital)	4
Prison (deaths in prison)	2
Deaths notified by practitioners	275
Total	859

It will be seen from the above that 394 deaths have been certified by a mere superficial examination of the body and such information regarding the illness as could be obtained from friends and relatives. Consequently, diagnosis in the majority of these cases must be far from accurate, and the resultant mortality rates misleading. The only satisfactory method of dealing with the situation is to carry out a complete post-mortem examination in all cases who have died without medical or hospital observation. Though this system might be unpopular amongst the natives at first, it would eventually lead to them demanding medical and hospital attention for the sick and dying. The Native Hospital is always available for treatment and advice for those Africans and Asiatics who are unable to afford doctors.

Another misleading factor in the mortality rates for Mombasa is the fact that numerous natives belonging to other districts may die in the Native Hospital. For instance, a great many of the deaths reported from the Native Hospital as being due to malaria occur in natives from the coastal reserves, and the same remark applies to other diseases.

Again it is open to grave doubt whether all the deaths occurring are ever reported to the Police and hence to the Health Office. Certainly, unauthorised burials take place in unauthorised cemeteries, and in the case of young infants it is possible that the bodies may be disposed of in various ways. Much of this is undoubtedly due to ignorance of the law, but as time goes on the situation should improve.

Compulsory notification of births would serve as a check on the non-reporting of deaths of young children.

Regarding the incidence of diseases causing death, pneumonia, as usual, heads the list with 155 deaths, or 18 per cent. of the total number. Other respiratory conditions account for 21 deaths only.

Pulmonary tuberculosis is shown as being responsible for 98 deaths, or 11 per cent. of the total. Respiratory diseases, including pulmonary tuberculosis, are thus shown to account for 274 deaths, or about 32 per cent. of the total—an unusually high figure. This group of diseases is intimately associated with bad housing, overcrowding, and bad ventilation.

Malaria is given as a cause of death in 59 cases, or 6.8 per cent., as compared with 13.5 per cent. in 1927, and 10.8 per cent. in 1926—a considerable fall.

Dysentery and diarrhœa account for 57 deaths, or 6.6 per cent., which is remarkably low, considering the contamination of food by dust and flies, absence of, and defects in, latrine accommodation, and a suspicious well-water supply in certain areas.

G.—Notifiable Infectious Diseases.

During the year, 238 cases of notifiable infectious diseases were notified, as compared with 158 in 1927, 267 in 1926, and 382 in 1925. A table is appended below, showing the numbers during the last three years :—

	1926.	1927.	1928.
Cerebro-spinal meningitis	1	1	3
Leprosy	15	10	10
Measles	131	30	7
Puerperal fever	1	2	6
Smallpox	3	—	4
Typhoid fever	8	46	67
Tuberculosis of lungs	103	58	112
Tuberculosis (non-pulmonary)	—	—	14
Relapsing fever	2	2	1
Whooping cough	1	3	3
Yaws	2	2	1
Plague	—	3	4
Erysipelas	—	1	3
Anthrax	—	—	3
Total	267	158	238

KISUMU.

Health and Mortality—Vital Statistics.

A.—Population.

RACE	1926	1927	1928
Europeans	141	153	165
Asiatics	1,303	1,257	1,600
Africans	6,212	6,218	5,500
	7,656	7,628	7,265

B.—Deaths.

RACE	1926	1927	1928
Europeans	3	..	..
Asiatics	49	53	43
Africans	191	140	147
	243	193	190

Crude Death-Rate per 1,000 *living* :—

1926 .. .. 24·9

1927 .. .. 26·5

1928 .. .. 26·9

ELDORET AND KITALE AND THE UASIN GISHU AND TRANS NZOIA DISTRICTS.

Health and Mortality—Vital Statistics.

A.—Population.

UASIN GISHU DISTRICT (including ELDORET.)

RACE	Male	Female	Children	Total
Europeans	827	438	455	1,720
Indians	699	100	165	964
Goans	68	22	38	128
Other Races ..	119	29	35	183
Africans (estimated)	..	..	..	17,010
	..	..	..	20,005

ELDORET, ELGONVIEW, KAPSOYA, ORTLEPPVILLE AND WEST ELDORET.

RACE	Male	Female	Children	Total
Europeans	196	129	138	463
Indians	499	90	180	769
Goans	57	17	35	109
Other Races ..	58	27	35	120
Africans (estimated)	..	..	..	2,248
	..	..	..	3.709

TRANS NZOIA DISTRICT (including KITALE).

RACE	Male	Female	Children	Total
Europeans	468	240	222	930
Asiatics	244	41	68	353
Other Races ..	35	15	12	62
Africans (estimated)	6,729	5,038	7,318	19,085
	..	..	..	20,430

KITALE TOWNSHIP.

RACE	Male	Female	Children	Total
Europeans	75	52	32	159
Asiatics	244	41	68	353
Other Races ..	35	15	12	62
Africans (estimated)	500	200	100	800
	..	..	..	1,374

B.—Births.

Eighteen births among Europeans were recorded in the Trans Nzoia for the year and 55 in the Uasin Gishu.

C.—Marriages.

The number of European marriages registered for the Uasin Gishu was 27.

D.—Deaths.

The registration of deaths during 1928 was not satisfactory. European deaths were registered for all areas. Asiatic deaths were recorded in Eldoret during the whole year. African deaths were recorded in Eldoret from July onwards.

TOTAL NON-NATIVE DEATHS RECORDED.

	Europeans	Asiatics	Africans
Eldoret	12	14	41
Uasin Gishu ..	23	6	
Kitale	4	..	..
Trans Nzoia ..	5	..	..

A crude death rate based on estimated population for the whole area would appear to be about 16 per 1,000 for non-natives.

Death rates for the different districts and townships have been calculated. They are based on very small numbers and are liable to be misleading. Probably the most reliable index of the health of the area during the year is afforded by comparing the actual number of non-native deaths recorded during the year with those recorded during 1927. These figures are: 1928, 55; 1927, 28.

The malaria epidemic was the chief cause of this increase. Malaria and blackwater fever were accounted responsible for 24 non-native deaths in the Uasin Gishu and five in the Trans Nzoia during 1928, as compared with five and two respectively during 1927.

Pneumonia and broncho-pneumonia caused 13 deaths in the Uasin Gishu and one in the Trans Nzoia, as compared with ten and two respectively during 1927.

E.—Infantile Mortality.

CAUSES OF DEATHS UNDER ONE YEAR.—UASIN GISHU.

	European.	*Indian.*
Malaria	2	2
Pneumonia	1	2
Broncho-pneumonia ...	1	2
Marasmus	1	—
Enteritis	—	1
Prematurity	—	1
	5	8

CAUSES OF INFANTILE DEATHS.—TRANS NZOIA.

Prematurity	1
Pneumonia	1
	2

F.—Notifiable Diseases.

The total number of cases of infectious disease reported was 56 as compared with 12 during 1927. This increase is due to an outbreak of measles and enteric fever in Eldoret.

The following is a list of cases notified :—

	Eldoret		Uasin Gishu		Trans Nzoia		Kitale	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Anthrax	1	1	1	..	7	..	..	..
Beri-beri	..	..	1	..	..	..	..	..
Cerebro-spinal	1	1	..	..	..	..	..	..
Leprosy	2	..	1	..	..	..	..	..
Measles	27	..	1	..	..	..	..	..
Plague	1	1	..	..	..	..	..	..
Puerperal Fever	1	1	..	..	..	..	..	..
Relapsing Fever	1	..	..	..	..	..	..	..
Tuberculosis	2	..	1	1	..	..	..	..
Typhoid and Para-typhoid	12	1	3	..	1	..	..	..

EUROPEAN OFFICIALS.

The figures for sickness and invaliding show that a considerable rise in the disability rate occurred during the year. The main cause of sickness was malaria, of which 438 cases are recorded ; the next in order being influenza.

Progress has been made with regard to the provision of sanitary housing, but it cannot by any means be said that officials are everywhere housed in satisfactory buildings. The importance of the provision of reasonable housing and office accommodation cannot be over-emphasised. It is probable that present conditions in some stations have a direct bearing on the sick rate, and that a considerable loss of efficiency, which cannot be recorded, occurs. The comparative figures relating to in-patients and out-patients are as follows :—

	In-patients.	*Out-patients.*
1926	1,199	429
1927	1,079	488
1928	1,276	569

Deaths among European officials were only three, as against six in 1927. The causes were :—

Malaria, sub-tertian	1
Blackwater	1
Carcinoma	1

A distinct rise took place in the number of invalidings, which totalled seventeen in 1928, as against nine in the preceding year. The causes were :—

Neurasthenia	3
Debility	7
Otitis media	1
Valvular disease of the heart	1
Malaria	2
Bronchitis	1
Synovitis	1
Asthma	1
	17

The comparative table of invalidings for the past three years is :—

1926	25
1927	9
1928	17

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST EUROPEAN OFFICIALS IN THE COLONY AND PROTECTORATE OF KENYA

	1926	1927	1928
Total Number of Officials Resident	1,683	1,753	2,171
Average Number Resident..	1,195	1,240	1,240
Total Number on Sick List	1,199	1,079	1,276
Total Number of Days on Sick List	7,908	5,777	8,734
Average Daily Number on Sick List	21·66	15·83	23·86
Percentage of Sick to Average Number Resident ..	1·81	1·28	1·92
Average Number of Days on Sick List to each Patient..	6·59	5·35	6·84
Average sick time to each Resident	6·61	4·66	7·04
Total Number Invalided	25	9	17
Percentage of Invaliding to Total Residents	1·48	·51	·78
Total Deaths	6	6	3
Percentage of Deaths to Total Residents..	·36	·34	·14
Percentage of Deaths to Average Number Resident ..	·50	·48	·24
Number of Cases of Sickness contracted away from Residence	—	—	—

NON-EUROPEAN OFFICIALS.

As in the case of European officials, the sickness rate and the average sick time among non-European officials showed a distinct rise in 1928 over the figures for the preceding year. The invaliding rate, however, was less.

The most frequent cause of sickness was malaria, with 2,089 cases, and influenza next.

The remarks concerning housing which are made in the section concerning European officials apply equally to non-Europeans.

The comparative table for in-patients and out-patients is as follows :—

	In-patients.	*Out-patients.*
1926	4,772 ...	932
1927	3,756 ...	645
1928	4,188 ..	2,875

The increase in out-patients is accounted for by additional facilities at railway centres and the larger number of minor cases thereby treated.

The total number of deaths, twelve, was larger than in any of the preceding years. The causes were :—

Broncho-pneumonia	2
Lobar pneumonia	4
Blackwater	3
Malaria	2
Cellulitis	1
	12

Invalidings, eight in number, were less than in preceding years. The causes were :—

Myopia	1
Cardiac disease	1
Nephritis	1
Neurasthenia	1
Debility	2
Asthma	2
	8

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST NON-EUROPEAN OFFICIALS IN THE COLONY AND PROTECTORATE OF KENYA.

	1926	1927	1928
Total Number of Officials Resident	2,645	2,760	3,059
Average Number Resident..	2, ·35	2,249	2,489
Total Number on Sick List	4,772	3,756	4,188
Total Number of Days on Sick List	24,996	18,439	22,691
Average Daily Number on Sick List	63.48	50 52	51·99
Percentage of Sick to Average Number Resident ..	3 20	2·25	2·49
Average Number of Days on Sick List to each Patient ..	5·24	4·91	5·42
Average sick time to each Resident	11·70	8·20	9·01
Total Number Invalided	17	12	8
Percentage of Invaliding to Total Residents	·64	·44	·26
Total Deaths	7	10	12
Percentage of Deaths to Total Residents..	·26	·36	·39
Percentage of Deaths to Average Number Resident ..	·32	·44	·48
Number of Cases of Sickness contracted away from Residence	—	—	—

HYGIENE AND SANITATION.

PREVENTIVE MEASURES.

In reviewing the work which has been done and the progress which has been made with regard to measures aimed at the prevention of disease it is essential, in order that no false impressions should be conveyed, to keep in view a number of considerations, among which are the following :—

(*a*) The number and circumstances of the population.

(*b*) The area of the country.

(*c*) The incidence of the various diseases and the reasons therefor.

(*d*) The methods by which prevention can be secured and the extent to which specific preventive measures are practicable under existing circumstances.

(*e*) The amount of medical and sanitary staff available.

(*f*) The actual effect of the measures taken and the relation of the amount of work done and progress made to the amount which is required.

In other sections of this Report some account has been given in connection with each disease of the incidence of that disease, and of such preventive measures as it has been possible to take, but, as indicated in the Model Report, it is desirable to review the work which has been done as a whole and if possible to evaluate the progress which has been achieved. Shortly to summarise this work without keeping in view the considerations enumerated above would be dangerous, since it would almost certainly be liable to give a false impression of progress, while at the same time it might readily tend to obscure the fact of the tremendous incidence of preventible disease. It might also divert attention from the reasons for the incidence and the methods by which alone that incidence can generally and appreciably be lessened.

The actual position is as follows : The population consists of some 12,000 Europeans, about 40,000 Asiatics and Arabs, and over two and a half million African natives. Of this population, the Asiatics live mostly in the towns and the Europeans either in the towns or in thinly populated rural areas. The great bulk of the African population, to the number of nearly two and a half millions, is unequally distributed over some two hundred thousand square miles of country.

Preventive Measures among the Native African Population in the Reserves.

Dealing first with the great African population, the most striking facts which are to be noted are its poverty and its ignorance. Where the African is a wage-earner he is, as yet, but seldom able to earn more than a pound a month, and where he is a producer the results of his industry are, on account of his ignorance, still meagre to a degree. There has been improvement with regard to both matters during the present century, and in many places this improvement has been relatively great. It is probable that further and very remarkable improvement may take place in the future. Nevertheless, the fact remains that the population as a whole is still poor, illiterate and uncultured. As a direct consequence the conditions under which the African lives and under which children are reared are insanitary and unhygienic in the extreme. The ordinary conveniences of life are almost entirely lacking. It is hardly possible to over-emphasise the fact that the average native is born, lives and dies amongst the most insanitary conditions. His house is a mud-walled, grass-roofed hut, devoid of light and ventilation and infested with vermin. Water supplies are almost everywhere either deficient or polluted, or both. The foodstuffs which are available in some districts are almost certainly deficient in quality and, though famine is not allowed to assume serious proportions, the actual amount of food available has a seasonal incidence varying between abundance and scarcity. Arrangements for the storage of food by individuals are primitive and transport and distribution have not yet reached an advanced stage of development. The use of soap is not generally known. Cleanliness in the preparation of food has yet to be learned. The necessity for cleanliness of the person is not generally appreciated; where it is appreciated is not always possible of achievement. The innocuous disposal of refuse and night soil is almost unknown. Beds, tables, chairs and spoons are not in general use, and the household effects comprise little more than a few calabashes or earthen pots. The ignorance of the women with regard to the care of children is profound. In addition to ignorance, insanitary habits are imposed by superstition. Old-established customs are prejudicial to advance. Such is the people and their environment.

With regard to the incidence of disease, the facts are broadly as follows: Almost every African native is infested with some type of intestinal worm. A large proportion suffer at one time or another from malaria. Over large areas plague and yaws are endemic. Syphilis appears to be becoming increasingly prevalent in certain districts. Pneumonia, broncho-pneumonia and tuberculosis take a large toll of life. When the causes of these diseases are considered in relation to the circumstances of the people the reason for the high incidence thereof becomes clear. Shortly it is this: The circumstances of the people are such that they live under conditions which are admirably suitable for the existence and spread of the causal agents of disease or of their animal hosts. Even where huts and villages are not overcrowded with humans, they are always overcrowded with the causative organisms of disease or the carriers of these organisms, so that escape from infection is for the great majority of the people impossible. This omnipresence of the agents of disease exists throughout the environs of the village, on the surface of every household utensil, and on the bodies and clothing of the people. A new type of house, many conveniences and much knowledge will be required before the incidence of disease can be markedly lessened.

In effect, until "General Measures of Sanitation" can be inaugurated and until "Housing" has been improved, specific "Preventive Measures" can, in but few instances, play any important part in the prevention of disease among the native peoples of Africa.

The knowledge of how to build an improved type of house, the means wherewith to build it and furnish it, and the knowledge of how to live in it if built are still lacking. The reasons for and the methods of sewage and refuse disposal are not understood, and there is complete ignorance of the etiology of disease. For the moment, poverty and ignorance bar the way.

Where people are living under circumstances such as have been outlined above and are too poor and too ignorant to alter these circumstances in any radical fashion, the only preventive measure which can be taken with any hope of real success is confined to the treatment of individuals. The position is then governed by the amount of medical and sanitary staff available.

It is true than in one Native Reserve in Kenya something has probably been done to lessen the incidence of severe hookworm disease, but in this case circumstances were exceptional as the affected population was comparativly small—about 60,000—and two medical officers were available for the work. In addition, many of the people had already made some advance in culture. Even in the instance referred to improvement has been achieved mainly with regard to only one disease. The population still suffers and dies from many others, few of which are so vulnerable to attack.

In other areas conditions are very different. In the Kavirondo and Kikuyu districts, for instance, the proportion of medical officers varies from one to 100,000 to one to a quarter of a million. The population also is living at a generally lower level of civilisation.

There is a brighter side to the picture of life in a Native Reserve. It has already been indicated in another section, and it is desirable to repeat here, that a great change is occurring in the native outlook. The people are at peace. Trade is increasing and the economic position is improving. A general desire for education is expressed on every side. Some ambitious individuals have seen new things and are desirous of imitating them. learning.

The general movement can be guided and directed and, though the general mass of the population is still living under conditions of barbarism, there is great hope for the future provided a wise and progressive policy of development can be pursued. The potentialities of the African have not yet been determined, but it is certain that he can rise to a higher level of civilisation than that in which he now exists. Unless there is some general rise, how is it possible to institute general measures for the prevention of disease?

With the present strength of medical staff, even including the few medical men engaged in mission work, and the number of sub-dispensaries which can be properly supervised, it is not possible to supply individual treatment to even that portion of the population which suffers from communicable disease the curing of which has any bearing on the general incidence of disease.

To what extent can any one medical officer come into effective contact with a quarter of a million people? To what extent can he provide effective medical relief, even if he confines his activities to one only of the many diseases?

If all the circumstances are taken into consideration the record of achievement in the prevention of disease is no mean one, but care must be taken to avoid creating an impression that such measures as have hitherto been possible can have had any really appreciable effect in reducing the general incidence of disease. Achievement has been attained mainly by means of treatment of individuals. A summary is given below.

MOSQUITO AND INSECT BORNE DISEASES.

Malaria.

Except in the Digo Reserve, preventive measures have been limited to the distribution of quinine, of which over 9,000,000 grains were issued from medical stores during the year.

The native population alone is over two and a half millions, and the majority suffer from malaria.

It becomes clear therefore that if consideration be given to the problem of malaria as a disease affecting the bulk of the native population little or nothing is yet being accomplished by way of treatment of the actual sick, and that the organisation, widespread as it may be, is still inadequate. The importance of what has been done lies, however, not in the actual number of persons treated but in the fact that an increasing number of people, even in remote areas, are now aware that there is a remedy for malaria. Such knowledge spreads. What is required is the means to spread it faster and into areas which it has not yet reached, to meet the demand as it is created, and, in time, to administer the drug under skilled supervision.

As regards other preventive measures which might be adopted in the case of malaria, the only ones which will ever be practicable generally over the great rural areas are the killing of mosquitoes in houses, the construction of houses of such a nature that mosquitoes are less liable to harbour in them, and the protection of folk from being bitten by them either by the use of bed-nets or by screening the house. In parts of the Coast district, where the population has some degree of culture, where the houses are square and of a better type, an attempt is being made to teach the people to adopt one or other of these measures, but it is too early to indicate the success that may be achieved. Over the rest of the country no such attempt can yet be made. Mosquitoes cannot be seen in the ordinary native hut, nor can a bed be introduced through the opening which serves as a door. The essential preliminary to the prevention of malaria throughout the Native Reserves is improved housing. The re-housing of hundreds of thousands of folk cannot be undertaken without specific research or approached otherwise than as a great adventure in administration, the execution of which has become a part of general policy.

Trypanosomiasis.

So far as this disease is concerned preventive measures in the year under review have been limited to the treatment of such cases as have been discovered. It appears that the incidence of the disease is not great and its distribution is very scattered. No recommendations additional to those put forward in 1927 appear to be necessary to control the disease in Kenya.

EPIDEMIC DISEASES.

Plague.

Preventive measures in the case of this disease have been limited to the inoculation of the population in the neighbourhood of infected areas, and the continuance of the rat campaign in the North and Central Kavirondo districts, where the disease is epidemic. As it is impracticable to inoculate a million and a half people each year, inoculation can only be carried out after plague has manifested itself in a particular area; that is, after some folk have died. Inoculation as a preventive measure is therefore limited in its application, and though in 1928 many lives have been saved, the fact must not be overlooked that over 500 deaths were reported as having occurred. The majority of these deaths occurred in the districts where an extensive rat campaign has now been carried on for over eight years. It is possible that the rat campaign has had an effect in reducing the incidence of plague in certain localised areas, but even if it has been effective in places the fact remains that a large number of cases of plague continue to occur in these districts. Experience has shown that rat destruction cannot be made so generally effective as to prevent the occurrence of cases. It must be recognised therefore that the measures which have been so far adopted with regard to the prevention of plague have been inadequate to abolish the disease. Further measures are obviously required. Experience has shown that native huts give harbourage to large numbers of rats; on an average to about 15, while on occasion as many as 60 have been obtained from one hut. To keep down the number of rats over an area of any size to a degree which eliminates plague having been shown by experience to be impossible under existing circumstances, it becomes necessary therefore to segregate the people from the rats. This can only be done by building out the rat. The solution to the problem, once again, is housing.

Smallpox.

Against this disease we are fortunately able to take preventive measures. The vaccination campaign which has been in operation now for some years was continued, the greater part of the population of Central Kavirondo being vaccinated during the year. Routine vaccination of infants in the Reserves is not yet, however, a feasible proposition.

Dysentery and Enteric.

The prevention of dysentery and enteric is dependent on the action which can be taken with regard to the following matters:—

(*a*) The innocuous disposal of night soil or refuse.

(*b*) The protection of water supplies.

(*c*) The protection of food supplies.

(*d*) Cleanliness in the preparation and cooking of food.

(*e*) The prevention of flies.

In the Digo and Teita Districts, where the custom of using latrines has been instituted, something has probably been effected in regard to the prevention of dysentery and enteric.

In the Native Reserves generally, no systematic attempt to introduce measures directed towards the prevention of bowel diseases has yet been possible. A campaign for the institution of the custom of using latrines throughout the Native Reserves is not a matter on which it is wise to embark unless it is possible to carry it out in such a fashion that due attention can be given to detail. Much preliminary propaganda and very careful supervision and teaching are required if satisfactory results are to be obtained. It is hoped that in the near future it may be possible to undertake work in this direction. Any latrine system, however, such as we may be able to establish at the present time will not entirely solve the problem of the incidence of dysentery, enteric, or of the intestinal infections of children. Until general cleanliness of the person and in the preparation of food can be achieved the incidence of bowel complaints will remain high. Such cleanliness is not possible in an African hut.

Tuberculosis.

Except in the small Coast district already referred to, where some improvement of housing is being attempted, no measures can at present be taken to prevent tuberculosis in the Native Reserves, save to segregate for a time in hospital such open cases of tuberculosis as may present themselves. The number which so present themselves or are likely to be discovered in the near future is, however, relatively so small that this measure cannot by any stretch of the imagination be regarded as likely to affect the incidence of the disease.

Tuberculosis is at present known to have a high incidence in more than one Native Reserve in Kenya; there is no apparent reason why it should not spread.

Again, we are faced with the general and housing conditions of the people which at present are all in favour of an extension of the disease.

Yaws.

Yaws is perhaps the only disease with regard to which it may be said that by treatment alone the incidence and spread have been checked and then only, probably, in the Kikuyu Reserve, where a definite campaign has been in progress for years. In Kavirondo as a whole it is doubtful whether any great effect has as yet been produced.

It is by no means certain that measures of treatment, unless accompanied by a change in the personal habits of the people themselves, will be sufficient completely to stamp out the disease.

Syphilis.

The treatment of individuals suffering from syphilis in itself requires a certain amount of organisation. Re-attendances have to be arranged for, whatever mode of treatment be adopted. Centres where treatment can be obtained require to be established and supervised. The larger the population and area concerned the greater number of treatment centres are necessary. The question of treatment is complicated among Africans in Kenya from the fact that, for some reason—apathy, ignorance or remoteness—treatment is not sought when the disease first manifests itself, and continued attendance when the inconveniences caused by symptoms has disappeared is exceedingly difficult to secure. Education as to the virtues of early treatment and the necessity for continued re-attendance is necessary.

The spread of the disease is aided from the fact that the ordinary conditions and customs of life are such that unless some material change takes place it is almost too much to expect that even the necessary large increase in medical staff and facilities would do more than check the spread of the disease without reducing its incidence. Among civilised communities social conditions which are recognised as bad in themselves are responsible for the spread of venereal disease. Among primitive Africans ordinary social customs favour the spread of the disease once it has been introduced. A general reduction of the incidence of syphilis will largely depend on a new conception of family life and a progression towards the state of society towards which the people are presumably being directed. General social education and a radical improvement of conditions are required.

HELMINTHIC DISEASES.

Ankylostomiasis.

The measures which have been taken with regard to the prevention of one helminthic disease, hookworm, have been detailed elsewhere. Summarised they have consisted in the treatment of the whole population of one Native Reserve on the Coast and the institution of a system of pit latrines. In another Native Reserve, also on the Coast, similar work is being carried on.

Other Helminthic Diseases.

It has already been indicated that infestation with taenia, ascaris and other helminths is almost universal among the African population.

Preventive measures in the case of tapeworm consist of the institution of latrines, individual treatment, meat inspection, and in the case of ascaris, latrines and cleanliness. The general institution of a latrine system has already been discussed. Meat inspection will not, however, be generally practicable for many years and for a long period therefore it is likely that treatment will be required on a large scale.

Ascaris is largely an infection of childhood. The general use of latrines by young children will not easily be achieved. It is probable also that marked decrease in the incidence of ascaris among children is more likely to be dependent on the improvement in the standard of general cleanliness than in the introduction of latrines. Once again a knowledge of the virtues of cleanliness and the importance of conditions under which cleanliness can be achieved become manifest.

In the preceding paragraphs an attempt has been made to review the work which has been done in the Native Reserves by officers of the Medical Department with regard to the institution of preventive measures against some of the diseases which are of outstanding importance. Shortly, it may be said that only in one small district has it been possible to institute measures aimed at a general improvement in housing and that, except in the case of worm infections, effective preventive measures involving the alteration of environmental conditions have not been and could not be initiated. Even in the case of helminthiasis such measures have only been possible in some of the smaller districts.

Generally, prevention has been limited to treatment and in only one disease, namely yaws, is it likely that treatment has been so widespread and general as to have had any effect on general incidence. It may be stated, therefore, that with the exception of helminthiasis and yaws effective measures for the prevention of disease have not yet been able to be instituted in the Native Reserves.

PREVENTIVE MEASURES IN TOWNSHIPS AND THE SETTLED AREAS.

Preventive measures against infectious diseases in townships and the settled areas may be divided into two classes, *viz.*, general measures of sanitation (including the provision of adequate housing) aimed at the removal of conditions prejudicial to the health of the population as a whole and special measures taken in respect of specific diseases. The first of these classes of measures is considered later and only special measures remain to be discussed.

As regards the European section of the community action taken in the way of providing advice as to the measures which should be taken on private premises follows the usual lines and is successful up to a point. The same may be said with regard to the Asiatic community. In the case of the African population in townships and in the settled areas, however, the adoption by the individual of specific measures is but little more easy of accomplishment than in the Native Reserves. Ignorance and poverty still stand in the way. Even though in some instances the standard of housing is better in townships, this is not yet sufficiently general or sufficiently high. Improvement, even when it exists, is ever offset by the general low standard of education and culture and by the low scale of wages which prevails. Up to the present therefore disease among Africans in townships and in the settled areas can still for the most part only be controlled by measures which cannot be undertaken by individual Africans themselves. In the case of diseases such as tuberculosis or many of the diseases of childhood, where prevention is largely dependent on the habits of the people, but little has yet been attained and a general reduction in incidence will not take place till education is more general and social and economic conditions have been greatly improved.

GENERAL MEASURES OF SANITATION.

Sewage Disposal.

The only town in the Colony which is provided with a water-borne sewage disposal system is Nairobi and even there the system is limited to the centre of the town. During the year some small extensions have been carried out and consideration has been given to the need for the preparation of a complete scheme for the whole municipal area. Such a scheme could not of course immediately be carried into effect, there is however great need for a general scheme in order that it may be ensured that all sewers, which are laid down in future as a result of the development of any area, may be so aligned as to fit in with further development at a later date.

In the other towns of the Colony the question of the institution of water-borne sewage systems is one of no small difficulty. That the introduction of such systems would in all cases result in a great and much desired sanitary improvement is undoubted; but as, with the exception of Mombasa, these towns are still comparatively small the question of finance appears to present for the moment an insuperable obstacle. Nevertheless the difficulties which are now experienced by local authorities in obtaining sweepers and in maintaining satisfactory night soil conservancy services are so great that the institution of more modern methods of sanitation cannot be indefinitely postponed, and it is therefore desirable that the whole position should as oon as possible be re-examined both from the technical and from the financial point of view.

Scavenging and Refuse Disposal.

The scavenging and refuse disposal services provided in the towns of Kenya cannot now in many instances be described as adequate or satisfactory. In all these towns during recent years there has been considerable development both in respect of trade and population, but owing to the fact that the reorganisation of the whole machinery of local government has during these years been under consideration it has been difficult both for local authorities and for the Central Government to embark on large schemes for the improvement of local services. The improvement of scavenging services has in the meantime, however, become urgent and the reorganisation of these services and the provision of modern plant and more adequate staff is a matter which will merit the attention of the new urban authorities which are to be established in 1929.

Water Supplies.

During the year a new water supply was provided for the township of Kisumu and progress was made with regard to the provision of a pipe-borne supply for Eldoret. The works necessary for improvement of the Mombasa supply have been commenced and the improvement of the Nairobi supply has been the subject of investigation by the Municipal Council. The problems presented by a number of the smaller towns are being investigated by the Public Works Department of Government.

The more difficult problems which are presented by the need for adequate supplies in the Native Reserves have also been the subject of some investigation and experiment by the Public Works Department and boring operations have been carried out in a number of districts. The work so far carried out has, however, but touched the fringe of the problem and it is most earnestly to be hoped that in the future it may be greatly extended. In the Native Reserves the difficulties which are experienced in some cases throughout the year and in almost all cases during part of the year at least in securing a reasonable supply of even comparatively clean water are very great and on sanitary as well as economic grounds there is necessity for extensive and detailed investigation. The problem is, however, a large one and should be considered in connexion with the general development of these areas, in places the solution may be simple but for its general solution large capital expenditure will probably be required. Nevertheless, until such time as radical improvements have been made in the rural water supplies, real sanitary progress will in many areas remain difficult or even impossible of accomplishment.

Offensive Trades—Sanitary Inspections, etc.

In each of the towns of Nairobi and Mombasa an average of five European sanitary inspectors was maintained and engaged in the ordinary routine of inspection work throughout the year. European sanitary inspectors were also maintained in Nakuru, Eldoret and Kisumu on similar work. In the case of inspectors posted at Nairobi and Mombasa work is of necessity limited to township areas. The inspectors posted at the smaller towns also undertake duties in the surrounding districts and an attempt is made to supervise trading centres in the neighbourhood. There remains much district work which cannot at present be undertaken. It is hoped, however, that as soon as the new authorities at Mombasa and Nairobi have appointed their own inspectorate staff it may be possible to transfer the Government inspectors who will be so relieved to posts in the settled areas and in the Native Reserves where such appointments have now become necessary.

School Hygiene.

Considerable progress towards the improvement of the school accommodation provided by Government was made during the year. New and modern buildings will shortly be available for the housing of European scholars in Nairobi, Nakuru, Eldoret and Kitale. A large and modern school for Asiatic scholars is also in process of erection at Nairobi.

In regard to African schools additional modern accommodation was provided at the Native Industrial Training Depot and the Jeanes School at Kabete and at Machakos and new schools are in course of construction at Kericho and Kapsabit.

Medical Inspection of School Children.

Provision was made in the Estimates for the year for the appointment of a whole time school medical officer and two nurses. As, however, the officer selected did not arrive in the country until nearly the end of the year the reorganisation of school medical inspection was of necessity delayed and work was confined to such inspections as could be carried out by the staff available. In Mombasa considerable progress was nevertheless made and owing to the appointment of a woman medical officer to the Health Office more extensive work, particularly in the girls' schools, was possible.

A feature of the results of the inspections made which merits grave consideration was the high incidence of various helminthic infestations. That helminthic infections should be common in an urban population among the small proportion of children which attends school suggests that an ever higher rate prevails among the general child population. Helminthic infestation of a population is as a rule the result of one or more of three conditions, *viz.*, a low standard of culture, poor housing and ineffective night soil disposal. In Mombasa the standards of culture, housing and night soil disposal in the native areas are probably higher on the average than in any other town in the Colony and Protectorate, but that the standards achieved are still inadequate and that there is need for widespread hygienic reform is clearly shown by the high incidence of helminthic infestation which would still appear to prevail.

LABOUR CONDITIONS.

As already noted the Senior Medical Officer, Labour, acted as Principal Inspector of Labour during the year. A European sanitary inspector was also seconded to assist him in the sanitary inspection of the conditions under which labourers were employed and housed. Draft legislation detailing the requirement of Government with regard to the housing of labour was the subject of discussion by the Labour Inspection Branch of the Native Affairs Department and the Medical Department during the year, but has not yet been submitted to Government. In spite, however, of the fact that legislation on the subject is still indefinite employers of labour are showing an increasing interest in the subject of housing. The fact that the provision of housing of permanent construction is economically sound is being more widely recognised.

The upward tendency in the rationing of labour persists. Trouble still occurs, however, in connexion with ballast and other contractors and on some estates along the line of the Railway where it passes through the drier and less fertile areas between Nairobi and Mombasa. A considerable number of cases of scurvy were encountered where efficient arrangements for rationing did not exist. Seven prosecutions against employers for not supplying proper rations were undertaken by the Native Affairs Department and seven convictions were obtained.

Labour Conditions in Towns.

The male African population of the towns of Kenya consists for the most part of the employees of Government or Municipal Departments, or of European or Asiatic firms, or of private employers. In other words the bulk of the male African population of the towns is a labour force. Under the Employment of Natives Ordinance the employer is required to provide housing for his employees in all cases where the latter are unable to return to their own homes each night. In towns where the employer is not necessarily the owner of land the provision of housing for his employees is not always possible and as a result there has sprung up in the course of time a " lodging-house " system which provides for the accommodation of those employees who cannot be housed by their employers. The great majority of huts or houses in the native areas of the towns are owned by African natives who add to their incomes by letting one or more rooms " in lodgings." The type of accommodation which is so provided is, however, not only expensive but inadequate and insanitary. The reason for this accommodation being almost universally insanitary is that there is not as yet a class of native that can afford the capital outlay necessary for the construction of permanent and sanitary housing. The problem is a very large one and the needs of the general situation can be met in one way and in one way only, which is by the provision of permanent housing on a large scale either by the State or by the local authority. An attempt to meet this need was made in a small way by the Municipal Council of Nairobi some years ago. For a number of reasons, among which were lack of experience and the small scale on which the attempt was made, the experiment was not an unqualified success.

With the passage of years the situation with regard to private employees has not, however, improved; on the contrary it has become worse since the labour force in the towns has grown with the towns and no new system of dealing with the question of its housing has been adopted. To-day there is no question of urban sanitation which merits careful consideration more urgently than the housing of private African employees in townships.

Housing of Government African Employees in Townships.

During the year progress was made with a general housing scheme for African employees of Government in Nairobi, which to a large extent should relieve the situation as regards at least the lower paid section in that town. In Nakuru, Kisumu, Eldoret, Kitale and in the great majority of the smaller townships or administrative centres in which Africans are employed by Government housing conditions are as a rule more or less unsatisfactory, in some cases unsatisfactory to a degree.

Labour employed on Railway Construction.

Construction proceeded throughout the year on the Gilgil-Thomson's Falls Branch. A construction hospital with an Indian assistant in charge was maintained at Gilgil. Medical supervision was provided by arrangement with a private practitioner resident in Nakuru who visited the work at frequent intervals. The general conditions were satisfactory and the health of the labour was good. The following table shows the labour strength and death rate :—

PERIOD	Average Number Employed	Death Rate per 1,000 per annum
January, February, March ..	2,053	Nil
April, May, June	2,350	11·91
July, August, September	1,471	7·95
October, November, December ..	1,378	2·90

Construction was commenced on the Kisumu-Yala Branch in November. It was hoped that arrangements for the medical supervision and attendance of labour could have been undertaken, on payment, in part at least, by the Medical Officer of the Church Missionary Society in charge of the Red Cross Hospital at Maseno. Unfortunately the proposal could not be given effect to and the duties in connexion with the medical arrangements had to be undertaken departmentally. A small construction hospital was erected near Maseno and additional accommodation was provided at the Kisumu Hospital. The line in its entre length runs through the Native Reserve. Labour has been taken on locally and lives in its own villages situated near the line of the railway. Honsing has not required to be provided. The health of the labour, living as it does under its normal conditions, has caused no anxiety. The average number employed in the two months during which construction has proceeded was 924. No deaths occurred.

HOUSING AND TOWN PLANNING.

Nairobi.

The following extract is taken from the Report of the Medical Officer of Health :—

> " Marked improvement in housing of the general non-native population has taken place during the past few years and the rate of progress has been well maintained during the year under review, one hundred and forty-five new dwellings having been erected within the municipality. Not only is the number of new dwellings erected more than keeping pace with the increased population but the type of house which is now being erected exhibits a considerable advance on that of only a few years ago. The wood and iron house is giving place to something of a more solid nature—less susceptible to the ravages of time, more pleasant to the eye and more healthy in which to live.
>
> The increased development in the Asiatic residential area around Ngara and Fort Hall Roads is particularly gratifying. This, coupled with housing schemes for Government and Railway Asiatic servants, does to a certain degree relieve congestion in the Bazaar and River Road. It would, however, be unwise for Council to congratulate itself that this trouble is being solved without their intervention. The number of persons now housed in the new residential areas is but a very small fraction of the Asiatic population, most of whom are left behind in the older localities, and it is poor consolation for those who remain under conditions, the filth, squalor and general unhealthiness of which are appreciated only by some of those who live there and by those whose work lies among them, to know that the more fortunate of their community are better off than they are. River Road and, more particularly, the Bazaar are largely comprised of dwellings totally unfit for human habitation which cannot be rendered fit for the purpose and where even the rats die of plague. In 1913, Professor Simpson recognised the Bazaar as a menace to the whole town. It is little better now. Treatment, and vigorous treatment, is urgently necessary and cannot be indefinitely delayed, moreover the longer delayed, the more expensive will the remedy become.
>
> During the last few months of the year the Town Planning Authority published for comment a Town Plan for Nairobi dealing mainly with the central portion. This plan, which has necessitated more work and time than is generally recognised, will provide a most valuable implement not only for securing the amenities of the town in its further development, but also in preventing the occurrence of more slum areas. In their estimate of the result of their work in reference to the existing slums, however, the Authority has been unduly and undesirably optimistic.
>
> #### NATIVE HOUSING.
>
> The Municipal Housing Scheme recently effected, and subjected to so much adverse criticism by the ill-informed is now proving its usefulness.
>
> The problem presented in the question of housing the large native population of Nairobi is one of the most difficult with which the Council has to deal. The ultimate aim must be to house all natives, other than domestic servants, within the Native Location. Already the Council is

faced with the expensive task of removing Pangani and re-housing at least a proportion of its residents in the location at Pumwani. Whatever may happen, the reproduction of conditions now existing in Pangani or even for that matter in Pumwani, must not be allowed to occur. On the other hand the housing of all the natives who require to be housed and should be housed under conditions at least as good as those pertaining in the Kenya and Uganda Railways location will involve a capital outlay of an alarming figure for a local authority already burdened with commitments, actual or potential, of vast proportions. The question is an intricate one and calls for serious consideration from many angles other than that of the public health. The social aspect of the matter is one which very materially affects the welfare of the citizens of Nairobi as a whole."

Mombasa.

The following extracts are taken from the Report of the Medical Officer of Health :—

" *General.*—Considerable progress has been made in the general scheme, and the survey coming under the scheme is now complete.

The construction of the new Makupa Road between its junction on the Salim Road and the Causeway is nearing completion.

A number of new buildings have been erected in the European residential area south of Kilindini Road, and there is also great activity of building in the business area at the junction of Salim and Kilindini Roads.

The completion of the Mukupa and Nyali Bridges will see migration to the mainland. It will be unfortunate to delay drawing up of a Town Planning Scheme for Nyali, Freretown, etc., and Highlands on the Changamwe Ridge right up to Kwa Jomvu. The municipal area is to be limited to township boundaries ; it is necessary and advisable that it should extend to cover all alienated land around Mombasa not included in Native Reserves.

The Old Town.—The construction of the Princess Marie Louise Road and Kobokoni Road has been completed, and numerous shops have been erected along the new frontage so provided. The construction of the balance of the roads provided by the Old Town improvement scheme, as distinct from the Town Planning Scheme, continues, and should be completed during 1929.

Temporary lay-outs for natives have been greatly developed, and have, to a certain extent, satisfied the present demand for native houses. The new houses on these plots are all being erected by Africans, who are granted permission to occupy on promise of payment of ground rent, which varies from Sh. 6 to Sh. 24 per month. It is understood that no lease is entered into, and there is consequently no security of tenure, so that the occupier may be turned out at any time. The new type of African building being provided on these plots is a considerable advance on that of the past, and the essential principles of the general scheme of the layout are as follows :—

1. Plots should not exceed 20 per acre.
2. Every plot should front on an open space or passage of a minimum width of 25 feet.
3. When plots adjoin, building should not take place within 5 feet of the plot boundary to ensure that a minimum space of 10 feet is left between the houses.
4. A space of a minimum depth of 8 feet should be left between the residential portions of the building and its out-houses.
5. All regulations should be in accordance with the plan sanctioned by the authority.

By the end of 1928, the total acreage under development for these temporary layouts was 165, houses completed or nearing completion numbered 738, and houses under construction 310.

Recently temporary layout schemes of this nature have been discontinued owing to a ruling by the Attorney General, that they were *ultra vires* the Town Planning Ordinance.

Government Housing.

European.—Twelve houses for European Government officials have been erected in the southern area, and the majority should be in occupation early in 1929. There still remains a definite shortage of houses—a problem which must be tackled in the near future.

Asiatic.—A start has been made with a scheme for Asiatic housing, but a further scheme will be needed to meet the requirements.

African.—Nothing has been done up to the present except proposals for the erection of lines for Customs askaris. There is a great need for the provision of satisfactory houses, and though the Railway have set an example, even they are still behind their needs."

The Smaller Towns—Kisumu, Eldoret, Nakuru, Kitale, etc.

For the smaller towns general " layout " schemes are in existence which while by no means complete, serve to direct development on orderly lines. During the year a very considerable amount of building took place in these towns more particularly in the nature of the provision of Asiatic business and residential quarters. It is a matter for satisfaction that these buildings represent a great advance on those which were erected in former years and that stone, brick or concrete is now being used to a much greater extent than formerly. Design also has greatly improved and on this account and as a result of the increased supervision which it has been possible to give to buildings under erection the development which has taken place in the smaller towns during the year has taken place, on the whole, on sound lines.

While, however, there has been satisfactory progress with regard to the provision of a better type of Asiatic house and shop during the year, the same cannot be said with regard to accommodation for Africans. This matter has already been referred to under the heading " Labour Conditions " inasmuch as it has reference to the accommodation of what may be termed the " urban labour force." Many very important issues are involved, but few of which are without bearing on the prosperity and convenience of all the various communities which make up the urban populations of the Colony. A high standard of public health and of economic efficiency cannot be obtained in the absence of a plan of development, which takes due cognisance of the necessity which exists for improving social conditions generally, and it is a matter of urgency that from now on much greater attention should be devoted to the development of the native areas of townships than has been possible in the past.

It is a matter for regret that during the year no progress can be recorded with regard to the provision of the new native location at Eldoret which was referred to in the Annual Report for 1927.

From the short review which is given above and from the extracts which are quoted from the reports of the Medical Officers of Health of Nairobi and Mombasa it will be clear that while much work has been done to produce schemes which will help to guide development and which are essential preliminaries to development, much still remains to be done before these schemes are complete. It will be apparent also that particular attention should now be directed to two branches of town planning : these branches are the improvement of slum areas now in occupation chiefly by Asiatics and the provision of housing and the establishment of better social conditions for Africans.

In recent years a grave difficulty which has stood in the way of urban development has been the absence of administrative machinery suitable to the needs of the times. The Local Government legislation which has been passed during 1928 makes provision, however, for the establishment of such machinery and sets up authorities both central and local which, when they have had an opportunity of reviewing the situation, should be able to take effective action.

FOOD IN RELATION TO HEALTH AND DISEASE.

Routine inspection of milk, meat and other foodstuffs was carried out as usual during the year in Nairobi, Mombasa, Kisumu, Nakuru and Eldoret. In addition a beginning was made with the inspection of meat at the administrative station of Fort Hall, where a European sanitary inspector had been posted ; while in the Digo Native Reserve where during part of the year an inspector was also available native and Asiatic shops and eating houses were subjected to inspection from time to time. Except in the towns, however, no general effective control is yet a matter of practical politics.

To facilitate control in the towns further powers are necessary, and there is urgent need for a Foods and Drugs Ordinance on the lines of the corresponding Acts in operation in Great Britain. It is hoped that a Bill dealing with the matter may be introduced during 1929.

The research on the mineral constituents of food which has been conducted for two years by workers and funds supplied by the Empire Marketing Board and under the auspices of the Civil Research Committee was terminated towards the end of the year. The death of the bio-chemist was a tragic finale to the investigations which had been conducted throughout in the fullest co-operation with members of the Department. Very valuable information has accrued and will be made public after report to the bodies concerned in England. A subsidiary metabolic experiment conducted departmentally is framed on the lines of that carried out in England whereby the effects of additions of whole milk, skimmed milk and biscuits to the dietary of school children was observed and measured. The investigation is being carried out at the Reformatory and the additions to the ordinary dietary of the various groups are maize meal, bone meal, condensed skimmed milk, and the salts representing the ash of a pint of milk respectively.

MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

Hygiene has a place in the curricula of all Government schools and personal propaganda is a function of every medical officer. The extent to which any medical officer can carry out specific propaganda is however dependent on many factors, not the least of which are the nature of the diseases which may be of especial importance in their districts and the size of the population with which each has to deal. In the Digo and Teita Districts where helminthiasis is of outstanding importance propaganda formed of necessity an essential in the matter of prevention and on account of the comparatively small populations concerned it could be carried out with success. In the great Kavirondo and Kikuyu Districts on the other hand where the ratio of medical officers to population is much smaller, it cannot be said that any measures taken by the Medical Department can reach directly more than a small proportion of the population. There is also the further obstacle which is everywhere felt, that it is a matter of the utmost difficult to convey an adequate idea of a new conception or of how to improve conditions merely by the spoken word. Fortunately a way out of this difficulty would appear to be feasible. At a large native agricultural show which was held the exhibition of an amateur cinematograph film which had been prepared by the Department and which dealt with such matters as the treatment of hookworm, the construction of latrines and the improvement of housing met with the greatest success. This success was clearly due to two factors, firstly the film having been taken locally provided a picture of conditions which were readily understood, and secondly as it showed work being done and improvements being effected by African natives it was appreciated at once by the audience that similar things could be done by themselves. If suitable educational films could be prepared locally and widely shown throughout the Native Reserves, there would appear to be little doubt but that great progress could be effected with regard to the spread of the knowledge of hygiene and sanitation among large sections of the population.

PUBLIC HEALTH EXHIBITS.

As in 1927 a public health stall was a feature at the Nairobi Agricultural Show in October. The stall was arranged to attract the attention not only of Europeans and Asiatics but of Africans and for this purpose some native dressers who had been engaged in the hookworm campaign elsewhere were drafted into Nairobi for the purpose of describing to native visitors to the Show the exhibits which dealt with the prevention of helminthic diseases. The efforts of these demonstrators appeared to meet with marked success and during the two days which the Show lasted the stall was continuously crowded with large numbers of natives listening to exhortations on elementary hygiene delivered by members of their own race in their native tongue.

PAMPHLETS AND PUBLICATIONS.

During the year two pamphlets were produced. One dealt with malaria and development and was addressed chiefly to Europeans, the other dealing with simple hygiene was addressed to natives; the latter pamphlet was written in Kiswahili and illustrated.

TRAINING OF SANITARY PERSONNEL.

An interesting experiment with regard to the provision of native sanitary personnel was made during the year in connexion with the hookworm campaign on the Coast, where, in order to maintain and consolidate the work which had been done in the way of providing latrines, some permanent supervising staff had become necessary. To meet this need a number of boys who had received a technical education at the coast technical school were engaged and given a short course in elementary hygiene. These boys are now being posted at various points in the district and as they have all had some technical training it is hoped that, in addition to performing their primary function of assisting the local headmen to ensure that latrines continue to be maintained by householders, they may be able to do useful work more particularly by advising the people as to how simple improvements may be made with regard to housing generally. It is too early to say whether this experiment will afford a solution to the problem of securing a suitable type of sanitary subordinate, but up to the present it would appear that the class of African who has had some general technical training provides a better field for the recruitment of such personnel than any that have so far been tried.

RECOMMENDATIONS FOR FUTURE WORK.

The conditions which obtain in a Native Reserve and which are conducive to a high incidence of disease have been indicated in the section "Hygiene and Sanitation." It follows that the main recommendation is that a general policy of development should be embarked upon for each of the great areas in native occupation. Education, trade, agriculture, communications, forestry and all the other factors concerned in the prosperity of a people would have to be taken into consideration. Sufficient staff would require to be provided. Finance would presumably be a matter of arrangement between the Central Government and the local bodies, the Local Native Councils. It would follow that some decentralisation of authority should take place.

Success in attaining even a slight improvement in the general conditions of life in the Native Reserves would result in an increase in production and trade, the magnitude of which cannot be estimated.

Recommendations with regard to a considerable increase in medical staff were accepted in principle by Government during the year and financial provision has been made in the 1929 Estimates for carrying some of them into effect. The settled areas and the Native Reserves both will benefit. Further recommendations on any scale would be premature until the result of the additional facilities has become manifest. It is likely, however, that a closer study of the problem of malaria will prove to be necessary.

The Annual Report for 1927 stated that "Attention to housing and the town planning of native areas in the neighbourhood of townships is an urgent necessity." The point can only be emphasised in 1928.

PORT SANITATION.

(A) GRANTING OF PRATIQUE AND ISSUE OF BILLS OF HEALTH.

The continued increase of shipping at Mombasa is shown by the following table :—

VESSELS ENTERING MOMBASA OR KILINDINI HARBOURS.

	1923	1924	1925	1926	1927	1928
Steamships	380	383	439	524	593	637
Dhows	558	223	242	412	1,405	1,468
TOTAL ..	938	606	681	936	1,998	2,105

The nett tonnage of steamers calling at Mombasa during the past six years has been as follows :—

1923	946,029
1924	1,037,631
1925	1,180,535
1926	1,444,320
1927	1,703,896
1928	1,814,731

Bills of Health issued to ships leaving for foreign ports in the year and for the two previous years are as follows :—

1926	624
1927	654
1928	784

The new lighting of the approaches to the harbour was completed in November and a few of the larger passenger steamers have since come into port after dark ; in one case at midnight. The vessels were cleared on arrival.

(B) INFECTIOUS DISEASES ON VESSELS ARRIVING.

The s.s. " Khandalla " arrived at Mombasa on the morning of the 14th onf January, from Bombay *via* Seychelles, having on board the infection of smallpox.

There were two cases amongst the deck passengers, an Indian woman and an Indian child. They were in the fourth or fifth day of the disease. One case had been in hospital for three days, the other for about twenty-four hours, therefore, it was considered that grave risk had occurred of further infection of the deck passengers. The cases and three contacts (intimate relations of the affected persons) were removed to the Infectious Diseases Hospital, Mombasa.

First and second-class pasengers for Mombasa were permitted to land under surveillance. Transit passengers were not permitted ashore, only officers of the Health, Immigration and Postal Departments were allowed on board.

All persons on board the ship were vaccinated.

The deck passengers for Mombasa were not permitted to land but proceeded with the ship to Zanzibar for quarantine.

The s.s. " Khandalla " returned to Mombasa from Zanzibar on the 16th on January, having discharged all deck passengers for Mombasa, and obtained a certificate of disinfection. The ship was granted restricted practique, and the cargo unloaded ; only persons protected by recent vaccination were allowed on board.

The s.s. " G. Mazzini " arrived at Mombasa on the morning of the 27th of June from Kismayo suspected of having had recently the infection of smallpox on board amongst the deck passengers. One case of smallpox had been discharged at Magadicio, and a further case at Kismayo on the 25th. The cases were amongst Mecca Pilgrims taken on board at Massana.

The first and second-class passengers for Mombasa (7 in number) were landed under surveillance. The deck passengers for Mombasa (11 in number) were quarantined at the Infectious Diseases Hospital. All passengers and crew who could not produce evidence of recent successful vaccination were vaccinated. No transit passengers were allowed ashore. Specified officials were allowed on board. Labour and stevedores examined and passed by the Port Medical Officer as properly protected against smallpox by vaccinations were allowed on board to work in the holds. Access to the passenger accommodation was not allowed.

The cargo having been discharged the ship went to Zanzibar to have its deck accommodation disinfected thoroughly by the quarantine station authorities there.

The ship returned to Mombasa from Zanzibar arriving on the 30th June, and was again granted restricted pratique on similar conditions.

The s.s. "Springfontein" arrived at Mombasa on the morning of the 30th June from Aden, suspected of having had recently the infection of smallpox on board amongst the deck passengers. The ship discharged one case of smallpox at Aden. The case occurred amongst Mecca Pilgrims taken on board at Jeddah. The vessel brought three first and twenty-two deck passengers for Mombasa.

Restricted pratique was granted under the same conditions and restrictions applied to the s.s. "G. Mazzini" as described above.

(C) EXAMINATION OF FOOD AND SECOND-HAND CLOTHING.

The staff of the health office are frequently called upon to inspect quantities of foods, particularly of the tinned variety of which large amounts are imported. Frequently large consignments have to be condemned as will be seen by the following table for 1928 :—

Condensed Milk	11.278	tins.
Fruits (dried)	191	,,
,, (tinned)	177	,,
Fish (dried)	14	lb.
,, (tinned)	833	tins.
,, (paste)	5,670	,,
Hams (salted)	455	lb.
Cheese (tinned)	1,063	,,
Onions	7,980	,,
Salt	50,000	,,
Meat (tinned)	150	tins.
Cigarettes	1,478.500	,,
Biscuits (tinned)	328	,,
Margarine	240	lb.
Vegetables (tinned)	650	tins.
Soup Squares	2,038	packets.
Tapioca	56	lb.
Rice	60	,,

As a rule these consignments are inspected on request from the agent or importer, and no difficulties are encountered in securing destruction. During the year, however, it has been found that in spite of the condemnations carried out at the Port of Mombasa a great deal of unsound or unwholesome food in dried or tinned form is from time to time exposed for sale in up-country towns.

The Medical Officer of Health, Nairobi, notes in his Annual Report for 1928 that "it appears that the methods of packing and materials used in packing tinned goods in temperate climates are not always wholly suitable in the case of consignments which must travel long journeys through the heat of the tropics. Numerous consignments have been found lately where the tin, being of a very light weight has rusted and become unsealed causing contamination and decomposition of the contents."

It is probable that a proportion at least of the unsound food referred to by the Medical Officer of Health, Nairobi, was unsound on importation and it is therefore desirable that steps should be taken as soon as possible to institute routine inspection of imported stuffs before these are distributed throughout the country : with this end in view it is proposed to commence the routine inspection of imported foodstuffs at the Port of Mombasa as soon as a European sanitary inspector can be released for this duty.

During the year numerous consignments of imported secondhand clothing amounting in all to 33,149 articles were inspected under the Port Health Regulations as against 21,641 articles and 16,855 articles in 1927 and 1926 respectivley.

All consignments which were not accompanied by a satisfactory certificate of disinfection or which had not been properly cleansed and could not be adequately treated locally were ordered to be re-exported or destroyed.

(D) QUARANTINE STATION.

The Sanitary Section at Zanzibar remains the quarantine station for the Colony and Protectorate of Kenya.

MATERNITY AND CHILD WELFARE.

An advance which can be recorded with regard to maternity and child welfare organisation during the year was the appointment of women medical officers to take charge of the work in Nairobi and Mombasa respectively.

NAIROBI.

In Nairobi the attendances were as follows :—

Child Welfare Attendances.

Number of infants brought to clinics during 1928 :—

Pumwani	998	average per clinic	19
Pangani	629	,, ,,	12
Railway Landies	572	,, ,,	11
Total attendances ...	2,199		

Dispensaries

Attendances	Pumwani	4,648
,,	Pangani	4,977
,,	Railway Landies	4,272
	Total	13,897

MOMBASA.

Total attendances Health Office centre	14,360
,, ,, Railway Landies	3,140
Total	17,500

Preparation for the opening of three additional centres in Mombasa in 1929 have been made.

KISUMU.

At Kisumu a child welfare clinic is held at the Native Hospital.

VOLUNTARY EFFORT.

The maternity homes and child welfare centres established for Asians and Africans by the Lady Grigg Child Welfare League continued to function in Nairobi and Mombasa. The success which has attended the maternity centre for Africans in Nairobi has been particularly marked and many African women are taking advantage of the facilities which are offered at this institution.

The objects aimed at at the different centres are not only the relief of individuals but also the training in midwifery of Indian and native women for work among their own people. The need of such is great and it is hoped that nothing will be allowed to stand in the way of the full development of the training side.

HOSPITALS, DISPENSARIES AND INSTITUTIONS.

GENERAL REMARKS.

An all round small increase in the number of patients admitted to the various Government hospitals throughout the country occurred during 1928. The increase closely corresponds with an increase in the number of cases of malaria.

The comparative table of admissions and deaths is :—

	In-Patients			Deaths		
	1926	1927	1928	1926	1927	1928
European Officials	1,199	1,079	1,276	6	4	3
Non-European Officials	4,772	3,756	4,188	8	9	12
General European Population ..	914	1,023	1,247	18	22	28
General Native Population ..	22,856	20,904	21,263	1,064	1,237	1,321

During the year strong representations were made by the residents of Mombasa regarding hospital accommodation for the town. As a result, it was decided to proceed at an early date with the erection of a combined general hospital providing increased facilities for natives and Europeans and for a separate section for Asiatics. The plans were well advanced at the end of the year.

No separate hospitals for Asiatics have been brought into being.

Hospital accommodation generally is barely sufficient for present needs. Extensions to existing hospitals and the erection of new institutions will require to be undertaken in the near future.

The attitude of Government towards non-Government hospitals and the assistance to be afforded by Government to the erection or extension of such were defined by a motion in Legislative Council as under :—

> " 1. That where it is necessary to establish a new non-Government European Hospital or to increase the accommodation at a previously existing non-Government hospital, Government should contribute towards capital expenditure at the rate of one pound for every pound supplied locally.
>
> 2. That before contributing towards capital expenditure Government should be satisfied that the necessity for expenditure exists, that needs cannot be met without expenditure, that buildings to be erected are of the most suitable type, and that the proposed expenditure is reasonable.
>
> 3. That Government contributions towards the recurrent expenditure of a non-Government hospital should be made, as a general rule, only with the object of defraying costs on account of the admission of indigent patients or of patients unable to pay full fees; payment to be calculated on the present system, *viz.*, at a rate calculated to cover the whole of the outgoings plus two-thirds of the overhead expenditure.
>
> 4. That only exceptionally should contributions be made by Government to non-Government hospitals with the object of bringing about a general reduction of fees.
>
> 5. That the acceptance of Government contributions towards capital or recurrent expenditure when the latter is to be devoted to a general reduction of hospital fees should involve inspection by Government.
>
> 6. That in the event of it being desired to institute non-Government Asiatic hospitals the foregoing principles should apply equally as to non-Government European hospitals.
>
> 7. That, in this resolution, a non-Government hospital means a hospital which is not maintained by central or local Government funds."

Powers are given in the Local Government Ordinances which were passed during the year for local government bodies to support or to maintain hospitals. Considerable developments may occur as a result though it is hardly likely that much will eventuate in the near future.

In Nairobi a suitable site was chosen and agreed to which will allow for hospitals to be grouped and so to come under a single administration.

EUROPEAN HOSPITALS.

The position with regard to the European hospitals has undergone no change during the year. No new construction has been undertaken. The available accommodation is barely sufficient for existing requirements.

The comparative table of admissions to European hospitals is :—

	1926	1927	1928
Total Number Treated ..	995	967	1,031
,, ,, Discharged ..	948	921	978
,, ,, of Deaths ..	23	25	26
,, ,, Remaining ..	24	21	27

Of the foregoing totals 287 patients were officials as against 279 in 1927.

Three officials and 28 non-officials died as against 6 and 19 in the previous year.

The distribution of the various cases was as follows :—

	Officials.	*Non-Officials.*
Mombasa	69	153
Nairobi	184	535
Kisumu	34	56

The question of the future status of the European Hospital, Nairobi, was made the subject of a recommendation by a committee which had been appointed in 1927. The position changed materially between the appointment of the committee and its report. Arrangements had been put in hand for the immediate erection by a private company of an up to date nursing home of thirty beds with modern operating and other facilities. As a result, the committee recommended that after the erection of the nursing home, which was approaching completion by the end of the year, the Government hospital should remain a Government institution but should restrict admission to officials and to those unable to pay nursing home fees. It is not known whether the recommendation has been accepted by Government.

The opening of the new nursing home in Nairobi referred to above is likely to relieve the position at the Government Hospital.

The Medical Department was consulted throughout in the preparation of plans.

Extensions are contemplated both at the Nakuru and Eldoret Hospitals, non-Government institutions, and money was included in Estimates for payment of the capital grants which will become due under the terms of the motion passed in Legislative Council as shown above.

NATIVE HOSPITALS.

The comparative table of admissions and out-patients for the past three years is as follows :—

	1926		1927		1928	
	In	Out	In	Out	In	Out
Patients	22,856	184,406	20,904	173,304	21,236	186,545
Deaths	1,064	..	1,237	..	1,321	..
Death Rate per 1,000 of Admissions	46·5	..	59·7	..	62·2	..

During the year construction of the Kitui Hospital (40 beds) the Eldoret Hospital (47 beds) and the Kakamega Hospital (78 beds) was completed and the buildings put into commission. The type of accommodation is vastly superior to that obtaining in the old insanitary temporary buildings previously in use.

Construction was proceeding at the close of the year on the hospital (40 beds) at Keruguya and on extensions for an additional 36 beds to the Machakos Hospital. Accommodation for nursing sisters will be provided at each.

The question of the provision of motor ambulances for hospital centres in Native Reserves has received consideration during the year. Some facilities for the transport of patients from distant parts is desirable though it may complicate the question of accommodation. The matter has been under discussion by more than one of the Local Native Councils.

Overcrowding of the hospitals, especially those situated in the settled areas, has again been the rule. The demands on hospital accommodation for labourers are steadily increasing and some comprehensive scheme will require to be evolved. The necessity for hospital accommodation for labour is being increasingly recognised by the settled community in areas remote from existing centres, and it is not unlikely that advantage may be taken of the provisions of the Local Government Ordinances to put forward definite schemes.

DISPENSARIES.

The number of sub-dispensaries maintained in 1928 shows a general increase over the preceding year. The details of distribution by districts is :—

Kyambu	3
Fort Hall	7
South Nyeri	4
Meru	4
Machakos	10
South Kavirondo	8
Central Kavirondo	11
North Kavirondo	10
Kisumu	3
Turkana	4
Digo	5
Malindi	9
Masai Reserve	1
Teita	2
Kitui	1

It will be noted that in individual localities the numbers of dispensaries are less than previously. This has come about as the result of experience. Dispensaries which have proved themselves of comparatively little use either from the fact of poor attendance or on account of inaccessibility have been closed down.

The replacement by permanent buildings of the old fashioned type of dispensary, *viz.*, the mud and wattle structure erected by the efforts of the local chiefs is being brought about by funds provided by Local Native Councils. Useful buildings in which a medical officer can carry out work in an efficient manner are being erected at sites where dispensaries have proved their value.

The present and future function of dispensaries in the Reserves were outlined in the Report for 1927. Circumstances have rendered it impossible in 1928 to deveop to any extent the type of work performed at dispensaries, but there has been no reason to change the line of policy which has been laid down.

The numbers of cases treated at dispensaries and by medical officers on tour exceed 300,000.

VENEREAL DISEASE CLINICS.

Four venereal disease clinics were maintained during the year at Nairobi and three at Mombasa.

Whilst suitable buildings have still to be provided in most cases, facilities for treatment were improved during the year. The African in towns is gradually beginning to appreciate these services. Attendances are increasing and the number of cases submitting themselves to more and prolonged courses of treatment is larger than previously.

The appointment of lady medical officers at Nairobi and Mombasa has resulted in a marked increase in the numbers of women and children applying for treatment.

Arrangements for the provision of treatment centres and clinics in some of the smaller townships are under consideration.

MATHARI MENTAL HOSPITAL.

Money was made available during the year from loan funds for the provision of some of the urgently needed additional buildings. Construction was commenced in July. The extra facilities which are being furnished comprise additional accommodation for twenty female native patients, a laundry, a bathroom, permanent compounds for both male and female native patients, and separate accommodation for sick native patients. New quarters for native staff and a new native kitchen had been completed at the end of the year. The general position when the additions are completed will be very much more satisfactory than heretofore, and overcrowding generally will be diminished. The patients will be able to be looked after better, and the dread of the escape of criminal lunatics, always a feature in the absence of compounds of permanent construction, will be removed. The sick bay accommodation will in itself constitute a very considerable advance in the amenities.

The accommodation for female European patients still remains unsatisfactory as far as violent patients are concerned.

Two thousand trees were planted during the year, and over three thousand have been reared from seed ready for planting in 1929.

General Statistics.

The following table shows the number of admissions, discharges, and deaths during the last three years :—

	ADMISSIONS			DISCHARGES			DEATHS		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Males	89	80	83	63	47	66	32	26	15
Females	9	25	28	7	10	16	6	6	8
TOTAL	98	105	111	70	57	82	38	32	23

The total number of patients under treatment in 1928 was 225.

The various forms of insanity for which the patients were admitted are as follows :—

Delusional insanity	5
Mania	53
Dementia	16
Epileptics	5
Alcoholics	5
Others	27
Total ...	111

Deaths.—The total number of deaths amounted to 23, as against 32 in 1927. Two Europeans died. The percentage of deaths to the total number treated was 10.2 and to the total number admitted was 20.7. The figures compare favourably with those of the preceding year. Deaths were due to a considerable variety of causes, and no epidemics occurred.

Discharges.—Eighty-two patients were discharged during the year; sixty-six males and sixteen females.

Remaining.—One hundred and twenty patients remained at the end of the year, as against one hundred and fourteen at the end of 1927—seventy-nine males and forty-one females.

EUROPEAN SECTION.

Seventeen cases—thirteen males and four females—were under treatment during the year.

Admissions.—Eleven cases in all were admitted during the year—eight males and three females.

Discharges.—Eleven patients were discharged—eight males and three females. Two males of those discharged were transferred to South Africa under the provisions of the Removal of Lunatics (European) Ordinance, one at the expense of Government and the other as a result of an application by the relatives.

Deaths.—The two deaths which occurred were due to general paralysis of the insane and to heart failure with delirium tremens.

Remaining.—Four males and one female.

Recreation and Amusements.—Tennis is played if the condition of the patients allows. A library is maintained and is being added to from time to time, and the daily newspaper is provided. A donation of a wireless set has been promised.

ASIATIC SECTION.

Twelve Asiatic patients were treated during 1928.

Remaining from 1927.—Four males, two females.

Admitted.—Six males, no females.

Discharged.—Seven males, one female.

Deaths.—None.

Remaining.—Three males, one female.

No separate accommodation exists for Asiatic patients and arrangements have to be made to allocate special quarters in the native blocks. As single rooms have to be provided, the strain on the available space is out of proportion to the numbers, taking into consideration the fact that three native patients are usually allotted to each room.

NATIVE SECTION.

The total number of cases under treatment during the year was 196—137 males and 59 females—as against 180 in 1927.

Admissions.—Males 69, females 25.

Deaths.—Males 13, females 8.

Discharges.—Males 51, females 12.

Remaining.—Males 73, females 39.

The criminal lunatics under treatment numbered 23, and 16 remained at the end of the year. The anxieties connected with the custody of criminal lunatics has already been referred to. One escape occurred but re-capture was effected.

Amusements.—Football is encouraged among the male patients, and is played with vigour. The presence of the native workmen employed on the construction of new buildings has infused new interest into the games. The women are encouraged to do basket work, and the money which is obtained from the sale of the articles produced is allowed to be spent by the workers themselves on the purchase of small luxuries.

A system of parole inside the hospital grounds is being increasingly adopted with no untoward results. Patients appreciate the privilege and recognise that it should not be abused.

The workshop maintains its value as providing a source of interest and amusement to patients and incidentally in saving public funds by effecting repairs, etc., to furniture.

GAOLS.

The comparative figures of sickness and deaths for the prisons throughout the country are given below :—

YEAR	Daily Average in Prison	Admissions to Hospital	Daily Average on Sick List	Percentage of Total Inmates	Deaths
1926	2,242	2,296	79·8	3·6	76
1927	2,534	1,973	83·3	3·3	61
1928	2,368	2,202	98·0	4·1	82

For the three largest prisons the figures are :—

	Nairobi			Mombasa.			Kisumu.		
	1926	1927	1928	1926	1927	1926	1926	1927	1928
Average Daily Number in Gaol	777	847	830	242	317	275	295	349	295
Average Daily Number on Sick List	43.4	51.4	50.0	7.1	7.07	5.0	4.1	4.4	12 0
Percentage of Average Daily Sick to Average Number in Gaol	5.6	6.0	6.0	2.9	2.2	1.8	1.4	1.3	4.0
Total Deaths	38	27	36	4	4	6	7	8	11
Percentage of Deaths to Average Daily Number in Gaol	4.9	3.0	4·3	1.7	1.3	2.2	2.2	2.4	3.7

Deaths are classified as follows :—

DISEASE	Nairobi Prison	All Other Prisons	Total
Pneumonia	14	19	33
Tuberculosis	10	3	13
Dysentery	7	5	12
Other Diseases ..	5	19	24
TOTAL ..	36	46	82

It will be noted from the above that the Nairobi Prison has the worst record. The observation is not a new one.

The type of accommodation in prisons remains unsatisfactory. Generally speaking, the floor space and cubic capacity is insufficient for the number of prisoners accommodated. Reconstruction of existing buildings or the provision of new gaols has not been effected during the year. Improvements in ventilation have been effected at Nairobi.

RETURNS.

TABLE I.

Administrative Division.

	Dr. J. L. GILKS	.. Director of Medical and Sanitary Services.
(1)	,, C. J. WILSON, M.C. ..	.. Deputy Director of Medical Service.
	,, A. R. PATERSON	.. Deputy Dircetor of Sanitary Service.
(2)	,, A. D. J. B. WILLIAMS, O.B.E.	.. Deputy Director of Medical Service.
	,, F. J. C. JOHNSTONE ..	.. Senior Sanitation Officer.
	Mr. A. P. LING	.. Chief Sanitary Inspector.
	Capt. J. S. ROBERTSON, M.B.E.	.. Medical Storekeeper.
	Mr. H. OGDEN	.. Office Superintendent.
	,, G. E. SCATTERGOOD ..	.. Accountant.
	,, T. R. WILSON, D.C.M. ..	.. Clerk.
(3)	,, J. L. BYRNE, M.C. ..	.. ,,
	,, A. E. WEBB	.. ,,
	,, R. L. O'SHEA	.. ,,
(4)	,, W. J. SHEARMAN	.. ,,
	Miss M. E. CAMERON	.. ,,
	,, M. A. CORFE	.. ,,
	Mrs. S. F. STACEY	.. ,,
	,, E. L. FEAST ..	.. ,,
	Miss K. M. TROOD	.. ,,
	,, T. M. RAPER	.. ,,
	,, J. M. C. MILLETT ..	.. ,,
	,, K. L. GRANT	.. ,,
	,, L. E. SHELTON	.. ,, (Learner Grade).

---

(1) Transferred to the Federated Malay States, 19th December, 1928.
(2) Promoted Deputy Director of Medical Service, 20th December, 1928.
(3) Transferred to the Forestry Department, 16th September, 1928.
(4) Transferred from the Agricultural Department, 22nd October, 1928.

Medical Division.

	Dr.	N. P. Jewell, M.C.	Acting Resident Surgical Officer
	,,	T. H. Massey, M.C.	Senior Medical Officer.
	,,	P. F. Nunan	,, ,, ,,
	,,	V. M. Fisher	,, ,, ,,
	,,	D. S. Scott	,, ,, ,,
(5)	,,	C. B. B. Reid	,, ,, ,,
	,,	A. S. Mackie	Medical Officer.
	,,	R. C. Briscoe	,, ,,
	,,	C. V. Braimbridge	,, ,,
	,,	R. A. W. Procter, M.C.	,, ,,
	,,	R. J. Harley-Mason	,, ,,
	,,	J. C. J. Callanan	,, ,,
	,,	C. H. Brennan	,, ,,
(6)	,,	J. A. Ross	,, ,,
	,,	P. Milne	,, ,,
	,,	F. R. L. Miller	,, ,,
	,,	E. W. C. Jobson	,, ,,
	,,	A. R. Esler	,, ,,
	,,	A. J. Enzer	,, ,,
	,,	C. R. Philip	,, ,,
	,,	W. Wilkinson	,, ,,
	,,	J. R. Davies	,, ,,
	,,	A. G. Thomson	,, ,,
(7)	,,	C. P. Donnison	,, ,,
	,,	J. A. Carman	,, ,,
	,,	D. Bell	,, ,,
	,,	J. H. H. Chataway	,, ,,
	,,	H. A. Cole	,, ,,
	,,	R. McFiggans	,, ,,
	,,	P. Ross	,, ,,
	,,	A. A. Battson	,, ,,
	,,	N. McLean	,, ,,
	,,	G. S. Hale	,, ,,
	,,	A. T. Howell	,, ,,
	,,	W. A. Bullen	,, ,,
	,,	E. A. Trim	,, ,,
	,,	W. L. Patterson	,, ,,
	,,	T. F. Anderson	,, ,,
	,,	M. Micheal Shaw (Mrs.)	,, ,,
	,,	C. N. Twining (Miss)	,, ,,
	,,	J. D. S. Thomas	,, ,,
	,,	F. L. Henderson	District Surgeon.
	,,	J. Forbes	,, ,,
	,,	C. J. Caddick	,, ,,
	,,	C. E. Cowen	,, ,,
	Mr.	H. L. Sargent	Assistant Surgeon.
	,,	W. N. Sargent	,, ,,
	,,	A. H. Ball	Dispenser.
	,,	F. E. Welch	,,
	,,	W. C. A. Skedge	,,
	,,	A. Lowe	Wardmaster.
	,,	T. Johnston	Nursing Orderly.
	,,	F. Galloway	,, ,,
(8)	Miss	E. B. Wishart	Matron.
	,,	I. Wilson	,,
(9)	Mrs.	S. J. Harrison	Nursing Sister.
	Miss	A. E. Davis	,, ,,
	,,	M. I. Rhind	,, ,,
	,,	R. Anderson	,, ,,
	,,	D. M. Kenny	,, ,,
	,,	F. M. Biggar	,, ,,
	,,	H. Baumann	,, ,,
	,,	A. K. Wilson	,, ,,
	,,	R. F. Nimmo	,, ,,
(10)	,,	A. Hagan	,, ,,
	,,	C. E. Eason	,, ,,
	,,	E. M. Birch	,, ,,
(11)	,,	E. T. Rogers	,, ,,
	,,	M. E. Roche	,, ,,
	,,	B. A. Robertson	,, ,,
	,,	I. M. Nicolson	,, ,,
	,,	P. K. Dutton	,, ,,

---

(5) Transferred from Tanganyika Territory, 13th August, 1928.
(6) Invalided from the Service, 9th December, 1928.
(7) Services terminated, 13th October, 1928.
(8) Resigned, 20th September, 1928.
(9) Retired on Pension, 26th December, 1928.
(10) Resigned, 21st April, 1928.
(11) Resigned, 13th July, 1928.

Medical Division.—Contd.

Miss S. I. Beazley	,, ,,
,, M. S. Neville	,, ,,
,, M. McLeod	,, ,,
,, C. S. Irvine-Robertson	,, ,,
,, S. Johnson	,, ,,
,, A. M. Pearton	,, ,,
,, M. E. E. Clelland	,, ,,
,, M. E. F. Chambers	,, ,,
(12) ,, M. Armstrong	,, ,,
,, V. M. Mordaunt	,, ,,
,, R. M. Hook	,, ,,
,, M. D. Kennedy	,, ,,
,, M. A. Marshall	,, ,,
,, A. M. Thom	,, ,,
,, R. F. McLachlan	,, ,,
,, H. M. Cochrane	,, ,,
Mr. W. G. Howe	Superintendent, Mathari Mental Hospital.
Mrs. A. T. Howe	Matron, Mathari Mental Hospital.
Mr. S. J. Bosch	Warder, Mathari Mental Hospital.
Mrs. M. A. Bosch	Temporary Asst. Matron, Mathari Mental Hospital.
Mr. F. M. Smurthwaite	Warder, Mathari Mental Hospital.

Sanitation Division.

Dr. H. S. de Boer, M.C.	Senior Sanitation Officer.
,, R. N. Hunter	,, ,, ,,
,, J. McP. Campbell	Sanitation Officer.
,, P. C. C. Garnham	,, ,,
,, K. A. T. Martin	,, ,,
,, P. P. D. Connolly	,, ,,
,, W. J. Hutchinson	,, ,,
,, N. M. MacLennan	,, ,,
,, R. F. G. Dickson	,, ,,
,, G. M. Hargreaves	School Medical Officer.
Mr. J. P. Cook	Senior Sanitary Inspector.
,, A. Bunker	,, ,, ,,
,, D. P. Broad	Sanitary Inspector.
,, R. C. Mills	,, ,,
,, H. E. Taylor	,, ,,
,, F. Hewitt	,, ,,
,, H. O. Salt	,, ,,
,, A. C. Arnold	,, ,,
,, H. Martin	,, ,,
,, R. W. Robinson	,, ,,
,, H. H. Rodgers	,, ,,
,, D. Mackintosh	,, ,,
,, C. A. Lewis	,, ,,
,, T. Hughes	,, ,,
,, F. Franks	,, ,,
,, R. D. Pearson	,, ,,
,, F. C. Gaffney	,, ,,
,, G. F. Newbury	,, ,,
,, H. Jordan	,, ,,
,, J. S. Stirton	,, ,,
,, F. E. Weaver	,, ,,
Mr. G. E. Shaw	Sanitary Overseer.
,, J. Whyte	,, ,,
,, H. Cock	,, ,,
(13) ,, J. B. Clarke	,, ,,
,, J. P. Kelly	,, ,,
Miss R. K. Sharp	Nursing Sister.
,, M. A. Perkins	,, ,,
,, E. A. M. Riordan	,, ,,
,, M. G. Rice-Oxley	,, ,,
Mr. W. J. Henfrey	Superintendent, Infectious Diseases Hospital.

---

(12) Resigned, 12th June, 1928.
(13) Resigned, 31st December, 1928.

Laboratory Division.

	Dr.	W. H. Kauntze, M.B.E.	Deputy Director of Laboratory Services
(14)	,,	R. P. Cormack	Senior Bacteriologist.
	,,	F. P. G. de Smidt	Assistant Bacteriologist.
	,,	H. D. Tonking	,, ,,
	,,	F. W. Vint	,, ,,
	Mr.	M. H. Fox	Government Analyst.
(15)	Dr.	F. C. Kelly	Chemical Officer.
	,,	D. Harvey	,, ,,
	Mr.	C. B. Symes	Entomologist.
	,,	G. H. E. Hopkins	,,
	,,	F. A. Bailey	Laboratory Superintendent.
	,,	J. A. Bell	,, Assistant.
	,,	J. S. McDonald	,, ,,
	,,	H. M. Nefdt	,, ,,
	,,	E. W. Grainger	,, ,, (Learner Grade).
	,,	T. Jones	,, ,, ,, ,,
	,,	L. Burton	,, ,, ,, ,,
	,,	S. Moore	,, ,, ,, ,,

---

(14) Transferred from Uganda, 1st May, 1928.
(15) Resigned, 6th January, 1928.

TABLE. II.

Financial.

The sanctioned Medical Budget for the year 1928 was a total of £210,066, as compared with £198,265 for the preceding twelve months.

Of the 1928 grand total, £199,302 was expended, leaving an unexpended sum of £10,764.

The headings under which the vote was arranged were as follows :—

Medical Department.

	Estimates.	Actual Expenditure.
ADMINISTRATIVE DIVISION.		
Personal Emoluments ...	£18,492	£18,058
MEDICAL DIVISION.		
Personal Emoluments ...	£71,395	£69,615
SANITATION DIVISION.		
Personal Emoluments ...	£26,306	£23,037
LABORATORY DIVISION.		
Personal Emoluments ...	£11,759	£11,382
MEDICAL DEPARTMENT.		
Other Charges ...	£82,114	£77,210

Revenue.

The total amount of revenue collected as hospital fees, sales of medicines, and surgical stores, bills of health and registration fees, was as follows :—

Hospital fees	£10,693	
Bills of health	679	
Laboratory fees	1,167	
Registration fees	87	
Sale of medicines, etc.	370	
		£12,996
Reimbursement from Uganda Government on account of Zanzibar Sanitary Station	425	
Reimbursement from Kenya and Uganda Railway on account of—		
(*a*) Medical services	8,319	
(*b*) Dental services	442	
Reimbursement on account of messing expenses, European Hospital, Nairobi	598	
		£9,784
		£22,780

Last year the total revenue collected amounted to £21,197.

TABLE III.

Return of Statistics of Population for the Year 1928.

COLONY AND PROTECTORATE OF KENYA	Europeans and Whites	Africans and Others	Asiatics
Number of Inhabitants in 1927	*12,529	†2,515,330	*26,759
Number of Births Registered in 1928	Figures not available	Figures not available	Figures not available
Number of Deaths Registered in 1928	Do.	Do.	Do.
Number of Immigrants during 1928	5,776	3,717	8,247
Number of Emigrants during 1928	5,564	2,633	7,955
Number of Inhabitants during 1928	*12,529	†2,515,330	*26,759

* 1926 Census. † Estimated.

TABLE IV.

METEOROLOGICAL RETURN FOR THE YEAR 1927.

Month.	Temperature.						Rainfall.		Winds.		Remarks
	Solar Maximum.	Maximum on Grass	Shade Maximum.	Range.	Max. and Min. mean combined.	Shade Minimum.	Amount in Inches.	Degree of Humidity.	General Direction.	Average Force 1–10.	
			°		°	°		%			
Nairobi: (Agricultural Department.)											
January	No Observations.	No Observations.	83	29	68.5	54	0.63	62			
February			87	34	70.0	53	0.64	53			
March			86	28	72.0	58	1.43	60			
April			81	22	70.0	59	4.48	71			
May			78	20	68.0	58	7.99	77			
June			74	20	64.0	54	1.96	78			
July			74	27	60.5	47	0.00	75			
August			74	22	63.0	52	0.86	77			
September			81	29	66.5	52	0.03	..			
October			82	27	68.5	55	2.58	..			
November			79	23	67.5	56	6.76	..			
December			86	29	71.5	57	1.86	..			
Year Average ..			80	..	67.5	54	29.22	..			
Nairobi: (Scott Laboratory).											
January	150	50	78	23	66.5	55	0.75	62		2.2	
February	154	55	82	27	68.5	55	0.73	52		1.5	
March	153	53	81	23	69.5	58	1.83	59		1.5	
April	149	56	76	18	67.0	58	4.98	47		1.7	
May	145	57	72	15	64.5	57	14.09	78		0.7	
June	146	53	70	16	62.0	54	1.49	76		0.7	
July	146	47	71	23	59.5	48	1.02	74		0.6	
August	145	49	70	18	61.0	52	0.46	71		1.0	
September	149	..	76	23	64.5	53	0.07	68		1.2	
October	151	..	76	21	65.5	55	3.63	67		2.2	
November	146	..	72	16	64.0	56	5.94	78		2.2	
December	147	..	75	19	65.5	56	2.31	69		1.3	
Year Average ..	148		75	..	65.0	55	36.30	67		1.4	
Mombasa:											
January	No Observations.	No Observations.	90.0	17.0	81.5	73.0	1.20	80	No Observations.	No Observations.	
February			91.5	16.5	82.8	75.0	Nil.	75			
March			93.0	22.0	83.9	71.0	3.00	79			
April			92.0	18.5	82.5	73.5	5.12	78			
May			87.0	16.0	79.0	71.0	13.65	85			
June			85.0	15.0	76.2	70.0	5.92	87			
July			..	Records defective							
August			..	Records defective			2.00				
September			87.1	17.1	79.2	70.0	0.32	75			
October			89.6	17.6	80.6	72.0	0.19	73			
November			89.2	17.6	80·6	71.6	6.53	79			
December			94.6	21.7	81.5	72.9	3.52	78			
Year Average ..											

Month	Temperature						Rainfall		Winds		
	Solar Maximum	Minimum on Grass	Shade Maximum	Range	Max. and Min. mean combined	Shade Minimum	Amount in Inches	Degree of Humidity	General Direction	Average Force 1–10	Remarks
			°		°	°		%			
KISUMU:											
January							1.26				
February							0.67				
March							3.66				
April							7.11				
May							9.82				
June							2.29				
July	No Observations.						2.82	No Observations.			
August							2.06				
September							6.20				
October							1.76				
November							2.08				
December							3.66				
YEAR TOTAL							43.39				
FORT HALL:											
January							2·57				
February							2·91				
March							2·71				
April							12·21				
May							7·03				
June	No Observations.						1·54	No Observations.			
July							0·16				
August							0·34				
September							0·32				
October							2·43				
November							7·16				
December							2·21				
YEAR TOTAL							41·59				

TABLE SHOWING MEAN ANNUAL RAINFALL AT VARIOUS POINTS IN THE DIFFERENT AREAS FOR THE YEAR 1928.

Station	Inches
COAST AREA.	
Malindi	28·76
Mombasa	41·45
Mazeras (Railway Station)	32·78
Mackinnon Road (,, ,,)	28·70
Voi (,, ,,)	12·60
Taveta	25·29
MOUNTAINOUS AREA.	
Masongaleni (Railway Station)	14·09
Makindu (,, ,,)	11·78
Kiu (,, ,,)	13·54
Athi River (,, ,,)	12·19
Nairobi (Department of Agriculture)	29·22
Kabete Reformatory	33·47
Naivasha (Railway Station)	22·57
Nakuru (,, ,,)	28·96
Molo (,, ,,)	33·57
Eldama Ravine	30·90
NYANZA AND KENYA PROVINCE.	
Lumbwa (Railway Station)	38·27
Muhuroni (,, ,,)	43·30
Kisumu	43·39
Mumias (Kakamega)	82·62
Kericho	68·45
Nandi (Kipkarren Lynd.)	45·83
Fort Hall	41·59
Nyeri (Senior Commissioner's Office)	38·54
West Kenya	22·40

COLONY AND PROTECTORATE OF KENYA.

RETURN OF DISEASES (In-Patients).

For the Year 1928.

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.																				
1. Enteric Group—																				
(*a*) Typhoid Fever	..	2	..	2	..	..	9	..	9	..	..	2	..	2	..	..	132	8	132	14
(*b*) Paratyphoid A.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
(*c*) Paratyphoid B.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	1	14	1
(*d*) Type not defined	..	..	..	..	..	..	3	..	3	..	..	2	..	2	..	27	154	36	181	2
2. Typhus Fever	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..
3. Relapsing Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	1	50	..
4. Undulant Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	7	7	8	..
5. Malaria—																				
(*a*) Tertian	1	16	1	17	..	..	57	..	57	..	..	45	..	45	..	1	326	2	327	13
(*b*) Quartan	..	3	..	3	..	..	3	..	3	..	..	6	..	6	..	4	176	3	180	..
(*c*) Aestivo-autumnal	..	121	..	121	..	1	33	..	39	..	5	402	..	407	1	18	1,592	44	1,610	8
(*d*) Undifferentiated	..	298	..	298	5	1	171	1	172	2	4	1,533	2	1,537	16	39	1.769	32	1,808	41
(*e*) Cachexia	..	3	..	3	..	..	2	..	2	..	..	3	..	3	..	..	23	..	23	1
(*f*) Blackwater	..	3	1	3	..	..	12	4	12	1	..	9	3	9	1	..	11	5	11	1
(*g*) Cerebral	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..
6. Smallpox	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	7	1	7	..
Alastrim	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. Measles	..	2	..	2	..	..	4	..	4	..	..	1	..	1	..	7	129	6	136	..
8. Scarlet Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9. Whooping Cough	..	3	..	3	..	..	4	..	4	..	..	..	..	..	..	..	23	2	23	2
10. Diphtheria	..	2	..	2	..	1	8	..	9	1	..	..	..	..	..	..	1	..	1	..
11. Influenza	3	153	..	156	2	..	44	..	44	1	14	710	..	724	4	12	469	12	481	12
12. Military Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13. Mumps	..	..	..	..	..	..	2	..	2	..	..	5	..	5	..	4	216	..	220	3
14. Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15. Epidemic Diarrhœa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16. Dysentery—																				
(*a*) Amœbic	..	4	..	4	..	..	21	..	21	3	..	9	..	9	..	..	77	16	77	1
(*b*) Bacillary	..	6	..	6	..	..	4	..	4	..	..	8	..	8	..	..	43	1	43	2
(*c*) Undefined or due to other causes	..	12	..	12	..	1	20	..	21	..	2	37	..	39	..	10	322	33	332	11

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year	Remaining in Hospital at end of year	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year	Remaining in Hospital at end of year	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year	Remaining in Hospital at end of year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(*Contd.*).																				
17. Plague—																				
(*a*) Bubonic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39	25	39	..
(*b*) Pneumonic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	6	..
(*c*) Septicæmic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Undefined	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	3	10	..
18. Yellow Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19. Spirochætosis ictero-hæmorrhagica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20. Leprosy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	119	90	5	209	58
21. Erysipelas	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
22. Acute Poliomyelitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23. Encephalitis Lethargica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
24. Epidemic Cerebro-spinal Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	36	19	37	1
25. Other Epidemic Diseases—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	2	5	..
(*a*) Rubeola (German Measles)	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	8	..	8	..
(*b*) Varicella (Chicken-pox)	..	3	..	3	..	..	1	..	1	..	1	5	..	6	..	32	576	1	608	19
(*c*) Kala-azar	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Phlebotomus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Dengue	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..
(*f*) Epidemic Dropsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*g*) Yaws	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	49	917	11	966	69
(*h*) Trypanosomiasis	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	3	42	4	45	..
26. Glanders	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. Anthrax	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	1	68	3	69	2
28. Rabies	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29. Tetanus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	8	13	2
30. Mycosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31. Tuberculosis, Pulmonary and Laryngeal	..	2	..	2	..	..	5	2	5	..	..	1	..	1	..	30	288	104	318	38
32. Tuberculosis of the Meninges or Central Nervous System	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
33. Tuberculosis of the Intestines or Peritoneum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	7	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	European Officials					European General Population (Non-Official)					Non-European Officials (including Asiatics)					Native General Population (including Asiatics)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year	Remaining in Hospital at end of year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
I.—Epidemic, Endemic and Infectious Diseases—(*Contd.*).																				
34. Tuberculosis of the Vertebral Column	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
35. Tuberculosis of Bones and Joints	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	36	9	36	6
36. Tuberculosis of other Organs—																				
(*a*) Skin or Subcutaneous Tissue (Lupus)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..
(*b*) Bones	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Lymphatic System ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	7	1
(*d*) Genito-urinary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Other Organs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76	18	76	1
37. Tuberculosis disseminated—																				
(*a*) Acute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	5	2
(*b*) Chronic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	3	..
38. Syphilis—																				
(*a*) Primary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	412	..	446	14
(*b*) Secondary	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	35	328	2	363	25
(*c*) Tertiary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	..	22	3
(*d*) Hereditary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	23	5	24	1
(*e*) Period not indicated ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	215	7	215	29
39. Soft Chancre	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	7	..	9	..
40. *A*.—Gonorrhœa and its complications	..	..	..	..	..	1	1	..	2	..	..	1	..	1	..	24	350	2	374	19
B.—Gonorrhœal Ophthalmia ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
C.—Gonorrhœal Arthritis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
D.—Granulomo Venereum ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
41. Septicæmia	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	30	28	30	..
42. Other Infectious Diseases ..	..	2	..	2	..	..	11	..	11	..	..	..	..	..	..	3	9	..	12	1
II.—General Diseases not mentioned above.																				
43. Cancer or other Malignant Tumours of the Buccal Cavity ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
44. Cancer or other Malignant Tumours of the Stomach or Liver	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	European Officials					European General Population (Non-Official)					Non-European Officials (including Asiatics)					Native General Population (including Asiatics)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
II.—GENERAL DISEASES NOT MENTIONED ABOVE—(*Contd.*).																				
45. Cancer or other Malignant Tumours of the Peritoneum Intestines, Rectum	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
46. Cancer or other Malignant Tumours of the Female Genital Organs	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	2	2	2	..
47. Cancer or other Malignant Tumours of the Breast	..	1	..	1	..	..	3	1	3	..	..	..	..	..	..	..	1	..	1	..
48. Cancer or other Malignant Tumours of the Skin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
49. Cancer or other Malignant Tumours of Organs not specified..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	30	4	30	3
50. Tumours, Non-malignant ..	..	1	..	1	..	..	1	..	1	..	..	2	..	2	..	2	121	13	123	4
51. Acute Rheumatism	..	2	..	2	..	..	5	..	5	1	..	..	..	..	..	..	77	2	77	3
52. Chronic Rheumatism	..	..	..	..	..	..	2	1	2	..	..	4	..	4	..	..	51	..	51	3
53. Scurvy (including Barlow's Disease)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	62	2	64	9
54. Pellagra	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
55. Beri-beri	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	6	1
56. Rickets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
57. Diabetes (not including Insipidus)	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	1	..
58. Anæmia—																				
(*a*) Pernicious	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	22	5	22	..
(*b*) Other Anæmias and Chlorosis	..	5	..	5	..	..	1	..	1	..	..	8	..	8	..	3	29	3	32	..
59. Diseases of the Pituitary Body..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
60. Diseases of the Thyroid Gland—																				
(*a*) Exophthalmic Goitre ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
(*b*) Other Diseases of the Thyroid Gland, Myxœdema ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
61. Diseases of the Para-thyroid Glands	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
62. Diseases of the Thymus ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
II.—GENERAL DISEASES NOT MENTIONED ABOVE—(*Contd.*).																				
63. Diseases of the Supra-renal Glands	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	..	..	..	..	..
64. Diseases of the Spleen	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	32	1	34	1
65. Leukæmia—																				
(*a*) Leukæmia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
(*b*) Hodgkin's Disease	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	5	1
66. Alcoholism	..	..	..	..	..	..	3	..	3	..	..	..	..	..	..	..	2	..	2	..
67. Chronic poisoning by mineral substances (Lead, Mercury, etc.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
68. Chronic poisoning by organic substances (Morphia. Cocaine, etc.)	..	..	..	..	..	..	..	..	..	..	..	31	..	31	..	..	..	..	..	..
69. Other General Diseases—	1	10	..	11	..	..	..	..	..	..	..	..	..	..	..	2	15	3	17	..
Purpura Hæmorrhagica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hæmophilia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diabetes Insipidus	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Auto-intoxication	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62	8	62	..
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.																				
70. Encephalitis (not including Encephalitis Lethargica)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	13	15	..
Cerebellar Disease	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
72. Locomotor Ataxia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
73. Other affections of the Spinal Cord	..	..	..	..	..	..	..	..	..	..	..	26	..	26	1	..	8	3	8	1
74. Apoplexy—																				
(*a*) Hæmorrhage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
(*b*) Embolism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Thrombosis	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—(*Contd.*).																				
75. Paralysis—																				
(*a*) Hemiplegia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	1	18	5
(*b*) Other Paralyses	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	4	26	2	30	..
76. General Paralysis of the Insane..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
77. Other forms of Mental Alienation	..	3	..	3	..	..	11	2	11	4	..	8	..	8	..	105	133	19	238	113
78. Epilepsy	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	3	50	4	53	10
79. Eclampsia Convulsions (non-puerperal) 5 years or over ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
80. Infantile Convulsions	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
81. Chorea	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
82. *A.*—Hysteria	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	13	..	13	..
B.—Neuritis	..	3	..	3	..	..	1	..	1	..	..	9	..	9	..	2	32	..	34	2
C.—Neurasthenia..	..	14	..	14	..	..	4	..	4	..	..	6	..	6	..	..	5	..	5	1
D.—Neuralgia	..	7	..	7	..	..	..	..	..	..	..	..	..	..	..	..	10	..	10	..
83. Cerebral Softening	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
84. Other affections of the Nervous System, such as Paralysis Agitans	..	4	..	4	..	1	6	..	7	..	..	53	..	53	..	2	47	6	49	2
85. Affections of the Organs of Vision																				
(*a*) Conjunctivitis	..	2	..	2	..	..	5	..	5	..	..	33	..	33	..	10	212	..	222	8
(*b*) Trachoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	5	..
(*c*) Tumours of the Eye ..	..	7	..	7	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
(*d*) Other affections of the Eye	..	1	..	1	..	..	2	..	2	..	1	31	..	32	1	5	128	..	133	5
86. Affections of the Ear or Mastoid Sinus	1	1	..	2	..	1	12	..	13	..	..	15	..	15	..	..	47	..	47	5
Other Diseases—Nose	..	1	..	1	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.																				
87. Pericarditis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	1
88. Acute Endocarditis or Myocarditis	..	..	..	..	..	..	3	..	3	..	..	1	..	1	..	..	2	2	2	..
89. Angina Pectoris	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	1	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM—(*Contd.*).																				
90. Other Diseases of the Heart—																				
(*a*) Valvular—	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
Mitral ..	..	..	..	..	..	..	5	1	5	..	..	..	..	..	..	..	28	15	28	1
Aortic ..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..	..	1	..
Tricuspid	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pulmonary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Myocarditis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
91. Diseases of the Arteries—																				
(*a*) Aneurism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Arterio-sclerosis	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
(*c*) Other Diseases	..	1	..	1	..	..	6	..	6	..	..	..	..	..	..	..	..	..	..	..
92. Embolism or Thrombosis (non-cerebral) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..
93. Diseases of the Veins—																				
Hæmorrhoids ..	..	6	..	6	..	..	6	..	6	..	1	6	..	7	..	..	15	..	15	..
Varicose Veins ..	..	1	..	1	..	..	5	..	5	..	..	..	..	..	..	..	..	..	..	..
Phlebitis ..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
94. Diseases of the Lymphatic System—	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	6	21	..	27	..
Lymphangitis	..	1	..	1	1	..	..	..	..	..	..	3	..	3	..	..	46	..	46	2
Lymphadenitis, Bubo (non-specific)	..	..	..	..	..	..	..	..	..	..	..	3	..	3	.	..	62	1	62	4
95. Hæmorrhage of undetermined cause	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
96. Other affections of the Circulatory System ..	..	3	..	3	..	..	7	..	7	..	..	14	..	14	..	5	24	9	29	..
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.																				
97. Diseases of the Nasal Passages—																				
Adenoids	..	6	..	6	..	..	1	..	1	..	..	..	..	..	..	..	3	..	3	..
Rhinitis ..	..	3	..	3	..	..	1	..	1	..	..	2	..	2	..	..	2	..	2	..
Coryza ..	..	1	..	1	..	..	..	..	..	..	..	8	..	8	..	..	17	..	17	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*)

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaing inHospital fro previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM—(*Contd.*).																				
98. Affections of the Larynx—																				
Laryngitis	..	1	..	1	..	..	6	..	6	..	..	..	..	..	..	1	9	..	10	..
99. Bronchitis—																				
(*a*) Acute	..	24	..	24	..	..	25	..	25	1	..	102	..	102	1	23	662	15	685	13
(*b*) Chronic	..	..	..	..	..	..	1	..	1	..	..	3	..	3	..	..	111	1	111	..
100. Broncho-pneumonia	..	..	..	..	..	..	4	..	4	..	3	7	2	10	..	10	68	54	78	4
101. Pneumonia—																				
(*a*) Lobar	..	1	..	1	..	..	3	..	3	..	..	8	3	8	1	..	416	127	416	14
(*b*) Unclassified	..	5	..	5	..	2	9	4	11	..	..	1	1	1	..	50	871	227	921	33
102. Pleurisy, Empyema	..	3	..	3	..	..	4	1	4	..	1	3	..	4	..	1	34	4	35	2
103. Congestion of the Lungs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	5	..
104. Gangrene of the Lungs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..
105. Asthma	..	2	..	2	..	..	1	..	1	..	..	12	..	12	..	..	18	..	18	..
106. Pulmonary Emphysema	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
107. Other affections of the Lungs	..	7	..	7	..	1	5	..	6	..	..	29	..	29	1	5	51	4	56	2
Pulmonary Spirochætosis	..	..	..	..	..	..	..	..	..	..	..	19	..	19	1	..	..	..	..	..
Emphysema	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
VI.—DISEASES OF THE DIGESTIVE SYSTEM.																				
108. *A*.—Diseases of Teeth or Gums—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Caries	..	15	..	15	..	..	11	..	11	..	..	31	..	31	..	..	8	..	8	..
Pyorrhœa	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	3	..	3	..
B.—Other affections of the Mouth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..
Stomatitis	..	..	..	..	..	..	1	..	1	..	..	3	..	3	..	..	14	2	14	1
Glossitis	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	9	..	9	..
109. Affections of the Pharynx or Tonsils—	..	7	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tonsilitis	2	53	..	55	..	1	48	1	49	..	1	36	..	37	..	3	65	..	68	1
Pharyngitis	..	9	..	9	..	..	1	..	1	..	..	9	..	9	..	..	17	..	17	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*)

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(*Contd.*).																				
110. Affections of the Oesophagus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
111. *A.*—Ulcer of the Stomach	..	1	..	1	..	..	4	..	4	..	..	..	..	..	..	..	..	..	..	..
B.—Ulcer of the Duodenum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
112. Other affections of the Stomach—																				
Gastritis	1	15	..	16	..	..	21	..	21	..	..	27	..	27	..	1	16	..	17	1
Dyspepsia	..	6	..	6	..	..	6	..	6	..	..	2	..	2	..	..	16	..	16	1
113. Diarrhœa and Enteritis—																				
Under two years	..	..	..	..	..	..	3	..	3	..	..	..	..	..	..	..	32	3	32	1
114. Diarrhœa and Enteritis—																				
Two years and over	..	56	..	56	..	..	29	..	29	..	..	58	..	58	..	11	360	22	371	2
Colitis	..	13	..	13	..	..	2	..	2	..	..	68	..	68	..	..	62	2	62	3
Colic	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
114A. Sprue	..	..	..	..	..	..	..	..	..	..	1	18	..	19	..	1	2	..	3	..
115. Ankylostomiasis	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	5	187	24	192	7
116. Diseases due to Intestinal Parasites	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	5	..	5	..
(*a*) Cestoda (Tænia)	..	1	..	1	..	..	1	..	1	..	..	..	..	..	..	3	193	..	196	1
(*b*) Trematoda (Flukes)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	8	..	9	1
(*c*) Nematoda (other than Ankylostoma)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..
Ascaris	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	4	122	..	126	3
Trichocephalus dispar.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Trichina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..
Dracunculus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Strongylus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oxyuris	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	4	..	4	..
(*d*) Coccidia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Other Parasites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..
(*f*) Unclassified	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	18	..	18	1
117. Appendicitis	2	29	..	31	1	..	118	..	118	1	..	6	..	6	..	..	16	2	16	..
118. Hernia	..	7	..	7	..	..	8	..	8	..	..	1	..	1	..	3	70	2	73	3
119. *A.*—Affections of the Anus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Fistula	..	1	..	1	..	..	3	..	3	..	..	..	..	..	..	..	6	..	6	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(*Contd.*).																				
B.—Other affections of the Intestines—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Enteroptosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Constipation..	..	2	..	2	1	..	5	..	5	..	..	67	..	67	..	1	59	..	60	1
120. Acute Yellow Atrophy of the Liver	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
121. Hydatid of the Liver	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
122. Cirrhosis of the Liver—																				
(*a*) Alcoholic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	2
(*b*) Other forms	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	8	19	3
123. Biliary Calculus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
124. Other affections of the Liver—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Abscess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	8	..
Hepatitis	..	2	..	2	..	..	6	..	6	..	..	7	..	7	1	..	25	2	25	2
Cholecystitis	..	1	..	1	..	..	5	..	5	..	..	..	..	..	..	..	3	..	3	..
Jaundice	..	9	..	9	1	..	5	..	5	..	..	1	..	1	..	..	16	4	16	3
125. Diseases of the Pancreas ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
126. Peritonitis (of unknown cause) ..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	4	3	4	..
127. Other affections of the Digestive System	..	60	..	60	1	..	51	3	51	1	..	48	..	48	..	5	84	11	89	5
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).																				
128. Acute Nephritis	..	1	..	1	..	..	5	1	5	..	1	..	..	1	..	..	25	7	25	1
129. Chronic Nephritis	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	7	1	7	4
130. *A.*—Chyluria	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
B.—Schistisomiasis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56	1	56	2
131. Other affections of the Kidneys—	..	1	..	1	..	..	4	..	4	..	..	3	..	3	..	..	11	..	11	1
Pyelitis	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	3	..	3	..
Renal Colic	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
132. Urinary Calculus..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
133. Diseases of the Bladder—																				
Cystitis	1	3	..	4	1	..	4	..	4	..	..	1	..	1	..	1	12	..	13	1

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospitalfrom previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—(*Contd.*).																				
134. Diseases of the Urethra—	..		..																	
(*a*) Stricture	..	1	..	1	..	..	3	..	3	..	..	..	..	..	..	..	21	..	21	1
(*b*) Other		1		1	..	..	5	..	5	..	..	7	..	7	..	3	41	..	44	..
135. Diseases of the Prostate—	..		..																	
Hypertrophy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Prostatitis		..		..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	1	..
136. Diseases (Non-venereal) of the	..		..																	
Genital Organs of Man ..	..	2	..	2	..	1	2	..	3	..	..	..	..	..	..	3	2	..	5	..
Epididymitis	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	12	..	13	..
Orchitis	..	1	..	1	..	..	1	..	1	..	..	4	..	4	..	..	37	1	37	2
Hydrocele	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	46	..	47	1
Ulcer of Penis	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	2	..
Paraphymosis		..		..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	9	..
137. Cysts or other Non-malignant	..		..																	
Tumours of the Ovaries ..		..		..	..	..	7	..	7	..	..	1	..	1	..	..	8	..	8	2
138. Salpingitis—	..		..																	
Abscess of the Pelvis		..		..	..	..	5	..	5	..	..	..	..	..	..	..	3	..	3	1
139. Uterine Tumours (Non-malig-	..		..																	
nant)		..		..	..	..	6	..	6	..	..	..	..	..	..	..	36	2	36	..
140. Uterine Hæmorrhage (Non-	..		..																	
puerperal)	..	..	..	..	..	..	8	..	8	..	..	..	..	..	..	..	4	..	4	3
141. *A.*—Metritis		1		1	..	..	11	..	11	2	..	1	..	1	..	..	8	..	8	..
B.—Other affections of the Fe-	..		..																	
male Genital Organs	..	..	..	..	..	..	25	..	25	..	..	..	..	..	..	..	8	..	8	..
Displacement of Uterus ..	..	2	..	2	..	..	2	..	2	..	..	..	..	..	..	..	37	4	37	1
Amenorrhœa	..	2	..	2	..	..	2	..	2	1	..	..	..	..	..	..	4	..	4	1
Dysmennorhœa	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Leucorrhœa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Ovaritis		..		..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
142. Diseases of the Breast (Non-																				
puerperal)—	..		..																	
Mastitis	..	..	..	..	..	..	3	..	3	..	..	..	..	..	..	..	6	..	6	..
Abscess of Breast	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	..	13	..
Vaginitis		..		..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	European Officials					European General Population (Non-Official)					Non-European Officials (including Asiatics)					Native General Population (including Asiatics)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
VIII.—Puerperal State.																				
143. *A.*—Normal Labour	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	10	..	10	..
B.—Accidents of Pregnancy—																				
(*a*) Abortion	..	..	..	..	..	..	19	..	19	..	..	..	..	..	..	1	21	..	22	1
(*b*) Ectopic Gestation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Other accidents of Pregnancy	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	5	14	6	19	1
144. Puerperal Hæmorrhage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..
145. Other accidents of Parturition ..	..	..	..	..	..	..	3	..	3	..	..	..	..	..	..	..	12	5	12	..
146. Puerperal Septicæmia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	7	9	..
147. Phlegmasia Dolens	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
148. Puerperal Eclampsia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1
149. Sequelæ of Labour	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	1	7	..
150. Puerperal affections of the Breast	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
IX.—Affections of the Skin and Cellular Tissues.																				
151. Gangrene	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	3	1	3	..
152. Boil	..	8	..	8	..	..	..	..	..	..	..	39	..	39	1	1	19	..	20	..
Carbuncle	..	1	..	1	..	..	12	..	12	1	..	2	..	2	..	..	1	..	1	..
153. Abscess	..	5	..	5	..	..	11	..	11	1	1	15	..	16	..	32	425	5	457	29
Whitlow	..	1	..	1	..	..	1	..	1	..	..	1	..	1	..	..	21	..	21	..
Cellulitis	..	3	..	3	..	..	11	1	11	..	..	10	1	10	..	8	210	1	218	14
154. *A.*—Tinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	..	13	2
B.—Scabies	..	..	..	..	..	..	..	..	..	..	..	26	..	26	1	7	128	..	135	3
155. Other Diseases of the Skin—	1	4	..	5	..	..	..	..	..	..	..	..	..	..	..	111	43	..	154	2
Erythema	..	1	..	1	..	2	1	..	3	..	1	17	..	18	..	..	..	..	..	..
Urticaria	..	4	..	4	..	..	2	..	2	..	..	6	..	6	..	2	13	..	. 15	..
Eczema	..	2	..	2	..	..	1	..	1	..	1	10	..	11	1	2	15	..	17	1
Herpes	..	1	..	1	..	..	..	..	..	..	..	2	..	2	..	..	8	..	8	..
Ulcers	..	3	..	3	..	..	4	..	4	1	..	9	..	9	..	143	1,596	16	1,739	201
Psoriasis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Elephantiasis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	38	2	41	9
Myiasis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	13	..	16	..
Chigoes	..	1	..	1	..	..	..	..	..	..	..	1	..	1	..	..	24	..	24	1
Cutaneous Leishmaniasis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
Other Diseases—Skin	..	..	..	..	..	..	6	..	6	..	..	..	..	..	..	..	5	..	5	..
Filariasis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).																				
156. Diseases of Bones—																				
Osteitis	..	4	..	4	..	..	5	..	5	..	..	1	..	1	..	4	61	4	65	10
Osteomylitis	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2
157. Diseases of Joints—																				
Arthritis	..	3	..	3	..	..	..	..	..	..	..	2	..	2	..	6	119	1	125	9
Synovitis	..	5	..	5	..	..	..	..	..	..	..	..	..	..	..	..	79	2	79	3
158. Other Diseases of Bones or Organs of Locomotion	..	27	..	27	..	2	5	..	7	..	3	127	..	130	3	27	241	3	268	16
XI.—MALFORMATIONS.																				
159. Malformations	..	1	..	1	..	..	3	..	3	..	..	..	..	..	..	..	6	1	6	1
Hydrocephalus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hypospadias	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Spina Bifida	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
XII.—DISEASES OF INFANCY.																				
160. Congenital Debility	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
161. Premature Birth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	4	..
162. Other affections of Infancy ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..
163. Infant neglect (infants of three months or over)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
XIII.—AFFECTIONS OF OLD AGE.																				
164. Senility—																				
Senile Dementia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Meno Pause	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	European Officials					European General Population (Non-Official)					Non-European Officials (including Asiatics)					Native General Population (including Asiatics)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
XIV.—Affections produced by External Causes.																				
165. Suicide by Poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
166. Corrosive Poisoning (intentional)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
167. Suicide by Gas Poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
168. Suicide by Hanging or Strangulation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
169. Suicide by Drowning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
170. Suicide by Firearms	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
171. Suicide by Cutting or Stabbing Instruments	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
172. Suicide by jumping from a height	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
173. Suicide by Crushing																				
174. Other Suicides	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
175. Food Poisoning	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4	..
176. Attacks of Poisonous Animals..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Snake Bite	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	2	25	1
Insect Bite	..	1	..	1	..	..	..	..	..	..	..	1	..	1	..	..	4	..	4	..
177. Other Accidental Poisonings ..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	6	1	6	..
178. Burns (by Fire)	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	130	14	130	7
179. Burns (other than by Fire) ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	12	..	12	1
180. Suffocation (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
181. Poisoning by Gas (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
182 Drowning (Accidental)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
183. Wounds (by Firearms. War excepted)	..	4	..	4	..	..	2	..	2	..	..	..	..	..	..	..	11	..	11	3
184. Wounds (by Cutting or Stabbing Instruments)	..	6	..	6	..	..	5	..	5	..	..	6	..	6	..	..	241	11	241	22
185. Wounds (by Fall)	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..	..	259	5	259	11
186. Wounds (in Mines or Quarries) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	..	51	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	European Officials					European General Population (Non-Official)					Non-European Officials (including Asiatics)					Native General Population (including Asiatics)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(*Contd.*).																				
187. Wounds (by Machinery)	..	..	..	..	..	..	1	..	1	..	..	2	..	2	..	..	104	7	104	7
188. Wounds (Crushing, *e.g.*, Railway Accidents, etc.)	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	24	..	24	..
189. Injuries inflicted by Animals, Bites. Kicks, etc.	..	..	..	..	..	..	4	..	4	..	..	2	..	2	..	..	221	4	221	12
190. Wounds inflicted on Active Service	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
191. Executions of Civilians by Belligerents	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
192. *A.*—Over Fatigue	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
B.—Hunger or Thirst	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
193. Exposure to Cold, Frostbite, etc.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
194. Exposure to Heat	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Heatstroke	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sunstroke	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
195. Lightning Stroke	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
196. Electric Shock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
197. Murder by Firearms	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
198. Murder by Cutting or Stabbing Instruments	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
199. Murder by other means	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
200. Infanticide (Murder of an Infant under one year	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
201. *A.*—Dislocation	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	33	..	33	1
B.—Sprain	..	2	..	2	..	..	..	..	..	..	..	11	..	11	1	..	43	..	43	..
C.—Fracture	..	3	..	3	..	..	15	..	15	..	..	1	..	1	..	..	213	17	213	30
202. Other External Injuries	1	92	..	93	2	1	77	1	78	1	2	251	..	253	4	306	1,824	40	2,130	173
203. Deaths by Violence of unknown cause	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
XV.—ILL DEFINED DISEASES.																				
204. Sudden Death (cause unknown)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
205. *A*.—Diseases not already specified or ill-defined	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	..	8	2
Ascites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	5	10	1
Oedema	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..
Asthenia	..	7	..	7	..	..	31	..	31	..	..	1	..	1	..	..	21	8	21	2
Shock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hyperpyrexia	..	3	..	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..
Sun Traumatism	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Food Deficiency Diseases ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	..	16	2
B.—Malingering	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS.																				
GRAND TOTAL ..	14	1,276	3	1,290	14	18	1,247	28	1,265	23	43	4,188	12	4,231	40	1,421	21.263	1,321	22,684	1,300
EUROPEANS—																				
Officials	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Non-officials	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ASIATICS—																				
Officials	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Non-officials	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
AFRICANS	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SURGICAL OPERATIONS—																				
Under General Anæsthesia ..	..	112	..	112	..	..	355	..	355	..	..	24	..	24	..	..	1,625	..	1,625	..
Others	..	1	..	1	..	..	..	..	..	..	..	8	..	8	..	..	45	..	45	..

COLONY AND PROTECTORATE OF KENYA.

RETURN OF DISEASES (Out-Patients).

NUMBERS TREATED DURING THE YEAR 1928.

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.												
1. Enteric Group—												
(*a*) Typhoid Fever	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Paratyphoid A.	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Paratyphoid B.	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Type not defined	..	..	..	..	..	..	..	..	..	..	..	..
2. Typhus	..	..	..	..	..	..	..	..	..	..	..	..
3. Relapsing Fever	..	..	..	..	..	..	..	..	..	13	8	21
4. Undulant Fever	..	..	..	..	..	..	..	..	..	..	..	..
5. Malaria—												
(*a*) Tertian	..	..	..	1	..	1	1	..	1	547	37	584
(*b*) Quartan	..	..	..	..	..	..	..	..	..	87	35	122
(*c*) Aestivo-autumnal	2	..	2	15	7	22	43	..	43	1,073	540	1,613
(*d*) Undifferentiated	34	2	36	28	17	45	368	..	368	17,668	3,402	21,070
(*e*) Cachexia	..	..	..	..	..	..	9	..	9	236	124	360
(*f*) Blackwater	..	..	..	..	..	..	..	..	..	3	..	3
6. Smallpox	..	..	..	..	..	..	..	..	..	..	..	..
Alastrim	..	..	..	..	..	..	..	..	..	..	..	..
7. Measles	..	..	..	..	..	..	..	..	..	17	10	27
8. Scarlet Fever	..	..	..	..	..	..	..	..	..	..	..	..
9. Whooping Cough	..	..	..	1	..	1	..	..	..	43	78	121
10. Diphtheria..	..	..	..	..	..	..	..	..	..	..	..	..
11. Influenza	24	..	24	17	9	26	140	..	140	4,221	422	4,643
12. Military Fever	..	..	..	..	..	..	..	..	..	..	..	..
13. Mumps	..	..	..	..	..	..	..	..	..	25	2	27
14. Cholera	..	..	..	..	..	..	..	..	..	..	..	..
15. Epidemic Diarrhœa	..	..	..	..	..	..	..	..	..	..	..	..
16. Dysentery—												
(*a*) Amœbic	2	..	2	3	..	3	1	..	1	33	12	45
(*b*) Bacillary	2	..	2	2	1	3	2	..	2	26	2	28
(*c*) Undefined or due to other causes	..	..	..	2	..	2	..	..	..	323	95	418

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(*Contd.*).												
17. Plague—												
(*a*) Bubonic	..	..	..	..	..	..	..	..	..	8	7	15
(*b*) Pneumonic	..	..	..	..	..	..	..	..	..	..	.	..
(*c*) Septicæmic	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Undefined	..	..	..	..	..	..	..	..	..	..	..	..
18. Yellow Fever	..	..	..	..	..	..	..	..	..	..	..	..
19. Spirochætosis ictero-hæmorrhagica	..	..	..	..	..	..	..	..	..	..	..	..
20. Leprosy	..	..	..	..	..	..	..	..	..	64	19	83
21. Erysipelas	..	..	..	..	..	..	..	..	..	..	1	1
22. Acute Poliomyelitis	..	..	..	..	..	..	..	..	..	..	..	..
23. Encephalitis Lethargica	..	..	..	..	..	..	..	..	..	..	..	..
24. Epidemic Cerebro-spinal Fever	..	..	..	..	..	..	..	..	..	..	..	..
25. Other Epidemic Diseases—												
(*a*) Rubeola (German Measles)	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Varicella (Chicken-pox)	..	..	..	..	..	..	..	..	..	91	5	96
(*c*) Kala-azar	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Phlebotomus Fever	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Dengue	..	..	..	..	..	..	..	..	..	9	..	9
(*f*) Epidemic Dropsy	..	..	..	..	..	..	..	..	..	1	..	1
(*g*) Yaws	..	..	..	..	..	..	..	..	..	6,014	4,600	10,614
(*h*) Trypanosomiasis	..	..	..	..	..	..	..	..	..	1	..	1
26. Glanders	..	..	..	..	..	..	..	..	..	..	..	..
27. Anthrax	..	..	..	..	..	..	..	..	..	8	2	10
28. Rabies	..	..	..	..	..	..	..	..	..	..	..	..
29. Tetanus	..	..	..	..	..	..	.	..	..	1	3	4
30. Mycosis	..	..	..	..	..	..	..	..	..	..	..	..
31. Tuberculosis, Pulmonary and Laryngeal	..	..	..	..	..	..	..	..	..	137	88	225
32. Tuberculosis of the Meninges or Central Nervous System	..	..	..	..	..	..	..	..	..	..	..	..
33. Tuberculosis of the Intestines or Peritoneum	..	..	..	..	..	..	..	..	..	..	..	..
34. Tuberculosis of the Vertebral Column	..	..	..	..	..	..	..	..	..	..	..	..
35. Tuberculosis of Bones and Joints	..	..	..	..	..	..	..	..	..	3	..	3

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—Epidemic, Endemic and Infectious Diseases—(*Contd.*).												
36. Tuberculosis of other Organs—												
(*a*) Skin or Subcutaneous Tissue (Lupus)	..	..	..	..	..	..	..	..	..	..	1	1
(*b*) Bones	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Lymphatic System	..	..	..	..	..	..	..	..	..	..	1	1
(*d*) Genito-urinary	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Other Organs	..	..	..	..	..	..	..	..	..	..	..	..
37. Tuberculosis disseminated—												
(*a*) Acute	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Chronic	..	..	..	..	..	..	..	..	..	..	..	..
38. Syphilis—												
(*a*) Primary	1	..	1	3	..	3	..	..	..	833	552	1,385
(*b*) Secondary	..	..	..	..	..	..	1	..	1	1,241	683	1,924
(*c*) Tertiary	..	..	..	1	..	1	..	..	..	152	71	223
(*d*) Hereditary	..	..	..	..	..	..	..	..	..	175	99	274
(*e*) Period not indicated	..	..	..	..	..	..	..	..	..	170	110	230
39. Soft Chancre	..	..	..	3	..	3	..	..	..	5	..	5
40. *A.*—Gonorrhœa and its complications	..	..	..	..	..	..	1	..	1	817	61	878
B.—Gonorrhœal Ophthalmia	..	..	..	..	..	..	..	..	..	..	..	..
C.—Gonorrhœal Arthritis	..	..	..	..	..	..	..	..	..	..	..	..
D.—Granulomo Venereum	..	..	..	..	..	..	..	..	..	..	..	..
41. Septicæmia	..	..	..	..	..	..	..	..	..	..	..	..
42. Other Infectious Diseases	5	..	5	2	2	4	1	..	1	59	2	61
Trypanosomiasis	..	..	..	..	..	..	..	..	..	..	..	..
II.—General Diseases not mentioned above.												
43. Cancer or other Malignant Tumours of the Buccal Cavity	..	..	..	..	..	..	..	..	..	..	..	..
44. Cancer or other Malignant Tumours of the Stomach or Liver	..	..	..	..	..	..	..	..	..	1	..	1
45. Cancer or other Malignant Tumours of the Peritoneum Intestines, Rectum	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
II.—General Diseases not mentioned above—(*Contd.*).												
46. Cancer or other Malignant Tumours of the Female Genital Organs	..	..	..	..	..	..	..	..	..	..	..	..
47. Cancer or other Malignant Tumours of the Breast	..	..	..	..	..	..	..	..	..	..	1	1
48. Cancer or other Malignant Tumours of the Skin	..	..	..	..	..	..	..	..	..	2	..	2
49. Cancer or other Malignant Tumours of Organs not specified	..	..	..	..	..	..	..	..	..	7	2	9
50. Tumours, Non-malignant	..	..	..	1	1	2	1	..	1	49	21	70
51. Acute Rheumatism	..	..	..	1	1	2	4	..	4	748	227	975
52. Chronic Rheumatism	..	..	..	..	..	..	7	..	7	412	224	636
53. Scurvy (including Barlow's Disease)	..	..	..	..	..	..	..	..	..	7	..	7
54. Pellagra	..	..	..	..	..	..	..	..	..	..	..	..
55. Beri-beri	..	..	..	..	..	..	..	..	..	3	..	3
56. Rickets	..	..	..	..	..	..	..	..	..	7	3	10
57. Diabetes (not including Insipidus)	..	..	..	..	..	..	..	..	..	16	1	17
58. Anæmia—												
(*a*) Pernicious	3	..	3	..	..	..	4	..	4	114	36	150
(*b*) Other Anæmias and Chlorosis	..	..	..	2	6	8	6	..	6	240	113	354
59. Diseases of the Pituitary Body	..	..	..	..	..	..	..	..	..	..	..	..
60. Diseases of the Thyroid Gland—												
(*a*) Exophthalmic Goitre	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Other Diseases of the Thyroid Gland, Myxœdema	..	..	..	..	..	..	..	..	..	..	1	1
61. Diseases of the Para-thyroid Glands	..	..	..	..	..	..	..	..	..	..	..	..
62. Diseases of the Thymus	..	..	..	..	..	..	..	..	..	..	..	..
63. Diseases of the Supra-renal Glands	..	..	..	..	..	..	..	..	..	..	..	..
64. Diseases of the Spleen	..	..	..	1	..	1	..	..	..	291	63	354
65. Leukæmia—												
(*a*) Leukæmia	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Hodgkin's Disease	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
II.—General Diseases not mentioned above—(*Contd.*).												
66. Alcoholism	..	..	..	..	..	..	..	..	..	1	..	1
67. Chronic poisoning by mineral substances (Lead, Mercury, etc.)	..	..	..	..	..	..	..	..	..	..	..	..
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.)	..	..	..	..	..	..	..	..	..	1	..	1
69. Other General Diseases—	14	..	14	26	12	33	10	..	10	78	3	81
Auto-intoxication	..	..	..	..	1	1	..	..	..	..	..	..
Purpura Hæmorrhagica	..	..	..	..	..	..	..	..	..	..	..	..
Hæmophilia	..	..	..	..	..	..	..	..	..	..	..	..
Diabetes Insipidus	..	..	..	..	..	..	..	..	..	..	..	..
III.—Affections of the Nervous System and Organs of the Senses.												
70. Encephalitis (not including Encephalitis Lethargica)	..	..	..	..	..	..	..	..	..	..	..	..
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	..	..	..	..	..	..	..	..	..	..	..	..
72. Locomotor Ataxia	..	..	..	..	..	..	..	..	..	1	..	1
73. Other affections of the Spinal Cord	..	..	..	..	..	..	..	..	..	3	..	3
74. Apoplexy—												
(*a*) Hæmorrhage	..	..	..	..	..	..	..	..	..	..	1	1
(*b*) Embolism	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Thrombosis	..	..	..	..	..	..	..	..	..	..	..	..
75. Paralysis—												
(*a*) Hemiplegia	1	..	1	..	..	..	..	..	..	6	..	6
(*b*) Other Paralyses	..	..	..	..	..	..	..	..	..	29	12	41
76. General Paralysis of the Insane ..	..	..	..	..	..	..	..	..	..	..	..	..
78. Other forms of Mental Alienation	..	..	..	..	1	1	..	..	..	69	25	94
78. Epilepsy	..	..	..	..	..	..	..	..	..	45	17	62
79. Eclampsia Convulsions (non-puerperal) 5 years or over ..	..	..	..	..	..	..	..	..	..	..	..	..
80. Infantile Convulsions	..	..	..	..	..	..	..	..	..	..	..	..
81. Neuralgia	5	..	5	1	1	2	18	..	18	363	50	413

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
III.—Affections of the Nervous System and Organs of the Senses.—(*Contd.*)												
82. *A.*—Hysteria	..	..	..	..	1	1	..	..	..	5	37	42
B.—Neuritis	2	1	3	2	..	2	25	..	25	837	42	879
C.—Neurasthenia	4	..	4	..	..	..	..	..	..	317	16	333
D.—Headache	..	..	..	..	..	..	..	..	..	22	..	22
83. Cerebral Softening	..	..	..	..	..	..	..	..	..	..	..	..
84. Other affections of the Nervous System, such as Paralysis Agitans	2	..	2	2	..	2	20	..	20	1.066	149	1,215
85. Affections of the Organs of Vision												
(*a*) Conjunctivitis	4	..	4	3	..	3	78	..	78	5.541	2.466	8,007
(*b*) Trachoma	..	..	..	..	..	..	1	..	1	9	..	9
(*c*) Tumours of the Eye ..	..	..	..	..	..	..	..	..	..	2	..	2
(*d*) Other affections of the Eye	7	..	7	4	3	7	64	..	64	972	244	1.216
86. Affections of the Ear or Mastoid Sinus	23	1	24	16	16	32	54	..	54	1.949	587	2.536
Other Diseases—Nose	..	..	..	..	..	..	..	..	..	..	..	..
IV.—Affections of the Circulatory System.												
87. Pericarditis	..	..	..	..	..	..	..	..	..	..	..	..
88. Acute Endocarditis or Myocarditis	..	..	..	..	..	..	..	..	..	..	1	1
89. Angina Pectoris	..	..	..	..	..	..	..	..	..	..	..	..
90. Other Diseases of the Heart—												
(*a*) Valvular—	..	..	..	..	..	..	..	..	..	17	3	20
Mitral	..	..	..	1	1	2	..	..	..	17	11	28
Aortic	..	..	..	..	..	..	..	..	..	1	1	2
Tricuspid	..	..	..	..	..	..	..	..	..	..	..	..
Pulmonary	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Myocarditis	..	..	..	..	..	..	..	..	..	..	..	..
91. Diseases of the Arteries—												
(*a*) Aneurism	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Arterio-sclerosis	..	..	..	1	..	1	..	..	..	..	..	..
(*c*) Other Diseases	..	..	..	2	..	2	..	..	..	5	..	5
92. Embolism or Thrombosis (non-cerebral)	..	..	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
IV.—Affections of the Circulatory System—(*Contd.*).												
93. Diseases to the Veins—												
Hæmorrhoids	1	..	1	1	..	1	2	..	2	97	29	126
Varicose Veins	1	..	1	..	..	..	..	..	..	..	..	..
Phlebitis	..	..	..	..	..	..	..	..	..	1	..	1
94. Diseases of the Lymphatic System—	..	..	..	..	..	..	..	..	..	34	2	36
Lymphangitis	2	..	2	..	..	..	..	..	..	59	15	74
Lymphadenitis, Bubo (non-specific)	..	..	..	5	1	6	4	..	4	267	26	293
95. Hæmorrhage of undetermined cause	..	..	..		..	..	..	..	..	..	..	..
96. Other affections of the Circulatory System	1	..	1	..	..	..	..	..	..	170	30	200
V.—Affections of the Respiratory System.												
97. Diseases of the Nasal Passages—	..	..	..	..	..	..	38	..	38	123	33	156
Adenoids	..	..	..	..	..	..	..	..	..	4	2	6
Rhinitis	1	..	1	..	2	2	3	..	3	61	10	71
Coryza	34	1	35	10	3	13	62	..	62	1.369	375	1.744
98. Affections of the Larynx—												
Laryngitis	..	..	..	1	1	2	53	..	53	172	13	185
99. Bronchitis—												
(*a*) Acute	28	..	28	4	8	12	227	..	227	11,820	1,735	13,555
(*b*) Chronic	..	..	..	1	..	1	..	..	..	1.131	637	1.768
100. Broncho-pneumonia	..	..	..	..	..	..	..	..	..	135	73	208
101. Pneumonia—												
(*a*) Lobar	..	..	..	..	..	..	..	..	..	139	61	200
(*b*) Unclassified	..	..	..	..	..	..	..	..	..	51	13	64
102. Pleurisy, Empyema	1	..	1	..	..	..	2	..	2	73	4	77
103. Congestion of the Lungs ..	..	..	..	..	..	..	..	..	..	..	..	..
104. Gangrene of the Lungs.. ..	..	..	..	..	..	..	..	..	..	..	..	..
105. Asthma	1	..	1	..	..	..	..	..	..	164	58	222
106. Pulmonary Emphysema ..	..	..	..	..	..	..	..	..	..	2	..	2
107. Other affections of the Lungs ..	1	..	1	1	..	1	57	..	57	4,580	409	4,989
Pulmonary Spirochætosis ..	..	..	..	..	..	..	..	..	..	..	..	..

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VI.—Diseases of the Digestive System.												
108. *A.*—Diseases of Teeth or Gums—	..	..	..	..	1	1	..	..	..	109	19	128
Caries	12	2	14	22	10	32	70	..	70	3,116	754	3,870
Pyorrhœa	..	..	..	..	..	..	..	..	..	1	1	2
B.—Other affections of the Mouth	..	..	..	..	..	..	21	..	21	5	3	8
Stomatitis	..	..	..	1	1	2	9	..	9	317	130	447
Glossitis	..	..	..	..	..	..	..	..	..	53	6	59
109. Affections of the Pharynx or Tonsils	..	..	..	..	..	..	..	..	..	81	4	85
Tonsilitis	26	2	28	11	9	20	51	..	51	870	191	1,061
Sore Throat	25	..	25	..	..	..	..	..	..	..	..	..
Pharyngitis	5	..	5	2	9	11	14	..	14	772	86	858
110. Affections of the Aesophagus ..	..	..	..	..	..	..	..	..	..	..	..	..
111. *A.*—Ulcer of the Stomach ..	..	..	..	2	..	2	..	..	..	1	2	3
B.—Ulcer of the Duodenum ..	1	..	1	..	..	..	..	..	..	..	..	..
112. Other affections of the Stomach ..	..	..	..	..	..	..	..	..	..	50	22	72
Gastritis	2	..	2	7	1	8	5	.	5	190	82	272
Dyspepsia	10	1	11	10	12	22	49	..	49	924	222	1,146
113. Diarrhœa and Enteritis—												
Under two years	..	..	..	..	..	..	..	..	..	582	138	720
114. Diarrhœa and Enteritis—												
Two years and over	19	..	19	17	5	22	33	..	33	2,423	257	2.680
Colitis	..	..	..	..	1	1	10	..	10	1,152	81	1,233
Colic	3	..	3	..	..	..	18	..	18	648	188	836
114A. Sprue	..	..	..	..	1	1	..	..	..	..	..	..
115. Ankylostomiasis	..	..	..	..	..	..	..	..	..	793	458	1.251
116. Diseases due to Intestinal Parasites—												
(*a*) Cestoda (Tænia)	1	..	1	3	..	3	1	..	1	4,205	1,131	5,336
(*b*) Trematoda (Flukes) ..	..	..	..	..	..	..	..	..	..	24	1	25
(*c*) Nematoda (other than — Ankylostoma)	..	..	..	..	..	..	..	..	..	119	21	140
Ascaris	1	..	1	2	1	3	1	..	1	3,366	3,020	6,386
Trichocephalus dispar. ..	..	..	..	..	..	..	..	..	..	2	..	2
Trichina	..	..	..	..	..	..	..	..	..	20	1	21
Dracunculus	..	..	..	..	..	..	..	..	..	11	..	11
Strongylus	..	..	..	..	..	..	..	..	..	..	..	..
Oxyuris	..	..	..	..	..	..	..	..	..	19	11	30
(*d*) Coccidia	..	..	..	..	..	..	..	..	..	..	..	..
(*e*) Other Parasites	..	..	..	..	..	..	..	..	..	564	60	624
(*f*) Unclassified	..	..	..	..	..	..	2	..	2	78	24	102

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(*Contd.*).												
117. Appendicitis	1	..	1	1	2	3	1	..	1	3	..	3
118. Hernia	1	..	1	..	..	..	..	..	..	54	5	59
119. *A.*—Affections of the Anus ..	1	..	1	..	..	..	..	..	..	..	..	..
Fistula	..	..	..	..	..	..	..	..	..	2	..	2
B.—Other affections of the Intestines—	38	..	38	4	5	9	410	..	410	7.472	1,651	9,123
Enteroptosis	..	..	..	..	..	..	..	..	..	..	..	..
Constipation	..	..	..	..	..	..	..	..	..	..	..	..
120. Acute Yellow Atrophy of the Liver	..	..	..	..	..	..	..	..	..	..	..	..
121. Hydatid of the Liver	..	..	..	..	..	..	..	..	..	..	..	..
122. Cirrhosis of the Liver—												
(*a*) Alcoholic	..	..	..	..	..	..	..	..	..	1	..	1
(*b*) Other forms	..	..	..	..	..	..	..	..	..	205	38	243
123. Biliary Calculus	..	..	..	..	..	..	..	..	..	..	..	..
124. Other affections of the Liver—												
Abscess	..	..	..	..	..	..	..	..	..	..	..	..
Hepatitis	1	..	1	2	1	3	3	..	3	59	9	68
Cholecystitis	..	..	..	..	..	..	..	..	..	..	..	..
Jaundice	..	..	..	..	..	..	1	..	1	11	1	12
125. Diseases of the Pancreas ..	..	..	..	..	..	..	..	..	..	..	..	..
126. Peritonitis (of unknown cause) ..	..	..	..	..	..	..	..	..	..	..	..	..
127. Other affections of the Digestive System	5	1	6	7	3	10	32	..	32	2,141	480	2.621
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).												
128. Acute Nephritis	..	..	..	..	..	..	..	..	..	6	..	6
129. Chronic Nephritis	..	..	..	..	..	..	..	..	..	14	3	17
130. *A.*—Chyluria	..	..	..	..	..	..	..	..	..	..	1	1
B.—Schistisomiasis	..	..	..	..	..	..	..	..	..	3	1	4
131. Other affections of the Kidneys—	..	..	..	..	..	..	..	..	..	81	3	84
Pyelitis	..	..	..	1	2	3	1	..	1	12	..	12
Renal Colic	..	..	..	..	..	..	..	..	..	3	..	3
132. Urinary Calculus	..	..	..	..	..	..	..	..	..	4	..	4
133. Diseases of the Bladder—												
Cystitis	..	..	..	..	..	..	3	..	3	35	17	52

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—(*Contd.*).												
134. Diseases of the Urethra—												
(*a*) Stricture	..	..	..	1	..	1	..	..	..	37	..	37
(*b*) Other	1	..	1	11	..	11	1	..	1	63	..	63
135. Diseases of the Prostate—												
Hypertrophy	..	..	..	..	..	..	..	..	..	..	..	..
Prostatitis	..	..	..	..	..	..	..	..	..	2	..	2
136. Diseases (Non-venereal) of the Genital Organs of Man—	2	..	2	4	..	4	..	..	..	17	..	17
Epididymitis	..	..	..	..	..	..	..	..	..	13	..	13
Orchitis	..	..	..	..	..	..	..	..	..	182	..	182
Hydrocele	..	..	..	..	..	..	..	..	..	108	..	108
Ulcer of Penis	..	..	..	..	..	..	..	..	..	3	..	3
Phymosis	..	..	..	1	..	1	..	..	..	16	..	16
137. Cysts or other Non-malignant Tumours of the Ovaries ..	..	..	..	..	..	..	..	..	..	..	9	9
138. Salpingitis— Abscess of the Pelvis	..	..	..	..	..	..	..	..	..	..	2	2
139. Uterine Tumours (Non-malignant)	..	..	..	..	..	..	..	..	..	..	8	8
140. Uterine Hæmorrhage (Non-puerperal)	..	..	..	..	2	2	..	..	..	..	45	45
141. *A.*—Metritis	..	..	..	..	..	..	..	..	..	..	17	17
B.—Other affections of the Female Genital Organs—	..	1	1	..	1	1	..	..	..	..	236	236
Displacement of Uterus ..	..	..	..	..	..	..	..	..	..	..	18	18
Amenorrhœa	..	1	1	..	2	2	..	..	..	..	17	17
Dysmennorhœa	..	..	..	..	..	..	..	..	..	..	65	65
Leucorrhoea	..	..	..	..	2	2	..	..	..	..	87	87
142. Diseases of the Breast (Non-puerperal)—	..	..	..	..	..	..	..	..	..	..	2	2
Mastitis	..	..	..	..	5	5	..	..	..	..	41	41
Abscess of Breast	..	..	..	..	1	1	..	..	..	..	18	18
VIII.—PUERPERAL STATE.												
143. *A.*—Normal Labour	..	..	..	..	..	..	..	..	..	..	10	10
B.—Accidents of Pregnancy—												
(*a*) Abortion	..	..	..	..	2	2	..	..	..	..	43	43
(*b*) Ectopic Gestation	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Other accidents of Pregnancy	..	..	..	..	..	..	..	..	..	..	11	11

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VIII.—PUERPERAL STATE—(*Contd.*).												
144. Puerperal Hæmorrhage	..	..	..	..	..	..	..	..	..	..	5	5
145. Other accidents of Parturition ..	..	..	..	..	..	..	..	..	..	..	41	41
146. Puerperal Septicæmia	..	..	..	..	..	..	..	..	..	..	1	1
147. Phlegmasia Dolens	..	..	..	..	..	..	..	..	..	..	..	..
148. Puerperal Eclampsia	..	..	..	..	..	..	..	..	..	..	..	..
149. Sequelæ of Labour	..	..	..	..	..	..	..	..	..	..	1	1
150. Puerperal affections of the Breast	..	..	..	..	..	..	..	..	..	..	..	..
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.												
151. Gangrene	..	..	..	..	..	..	..	..	..	..	..	..
152. Boil	13	..	13	13	4	17	58	..	58	662	104	766
Carbuncle	2	..	2	1	..	1	2	..	2	6	..	6
153. Abscess	3	..	3	8	3	11	8	..	8	755	115	870
Whitlow	..	..	..	..	..	..	..	..	..	77	9	86
Cellulitis	2	..	2	3	..	3	5	..	5	921	138	1,059
154. *A.*—Tinea	1	..	1	8	1	9	3	..	3	558	103	661
B.—Scabies	6	..	6	17	7	24	14	..	14	2,893	905	3,798
155. Other Diseases of the Skin—												
Erythema	8	2	10	2	3	5	30	..	30	286	85	371
Urticaria..	..	..	..	..	..	..	6	..	6	111	20	131
Eczema	11	3	14	3	2	5	21	..	21	515	135	650
Herpes	..	..	..	..	..	..	..	..	..	55	5	60
Ulcers	5	..	5	6	..	6	30	..	30	10,842	1,884	12,726
Psoriasis	..	..	..	..	..	..	..	..	..	9	4	13
Elephantiasis	..	..	..	..	..	..	..	..	..	54	15	69
Myiasis	2	..	2	..	1	1	..	..	..	9	11	20
Chigoes	1	..	1	1	..	1	11	..	11	454	154	608
Cutaneous Leishmaniasis ..	..	..	..	..	..	..	..	..	..	..	..	..
Prickly Heat	..	..	..	..	..	..	..	..	..	31	1	32
Other Diseases—Skin	..	..	..	2	1	3	..	..	..	..	..	..

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).												
156. Diseases of Bones—												
Osteitis	1	..	1	..	3	3	..	..	..	103	22	1
157. Diseases of Joints—												
Arthritis	..	..	..	..	..	..	2	..	2	763	243	1
Synovitis	1	..	1	..	..	..	1	..	1	167	9	
Bursitis	1	..	1	..	..	..	..	..	..	..	2	
158. Other Diseases of Bones or Organs of Locomotion	16	..	16	7	4	11	149	..	149	4,497	827	5,3
Other Diseases—Connective Tissue..	..	..	..	..	..	..	..	..	..	134	..	13
XI.—MALFORMATIONS.												
159. Malformations—												
Hydrocephalus	..	..	..	..	..	..	..	..	..	4	2	
Hypospadias	..	..	..	..	..	..	..	..	..	..	..	..
Spina Bifida	..	..	..	..	..	..	..	..	..	..	..	..
XII.—DISEASES OF INFANCY.												
160. Congenital Debility	..	..	..	..	..	..	..	..	..	7	4	
161. Premature Birth	..	..	..	..	..	..	..	..	..	..	..	
162. Other affections of Infancy ..	..	..	..	..	..	..	..	..	..	..	..	
163. Infant neglect (infants of three months or over)	..	..	..	..	..	..	..	..	..	..	..	
XIII.—AFFECTIONS OF OLD AGE.												
164. Senility—												
Senile Dementia	..	..	..	..	..	..	..	..	..	2	..	

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.												
165. Suicide by Poisoning	..	..	..	..	..	..	..	..	..	..	..	..
166. Corrosive Poisoning (intentional)	..	..	..	..	..	..	..	..	..	..	..	..
167. Suicide by Gas Poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..
168. Suicide by Hanging or Strangulation	..	..	..	..	..	..	..	..	..	..	..	..
169. Suicide by Drowning	..	..	..	..	..	..	..	..	..	..	..	..
170. Suicide by Firearms	..	..	..	..	..	..	..	..	..	..	..	..
171. Suicide by Cutting or Stabbing Instruments	..	.	..	..	..	..	..	..	..	..	..	..
172. Suicide by jumping from a height	..	..	..	..	..	..	..	..	..	..	..	..
173. Suicide by Crushing	..	..	..	..	..	..	..	..	..	..	..	..
174. Other Suicides	..	..	..	..	..	..	..	..	..	..	..	..
175. Food Poisoning	..	..	..	..	..	..	..	..	..	1	1	2
176. Attacks of Poisonous Animals—												
Snake Bite	..	..	..	1	..	1	..	..	..	5	..	5
Insect Bite	1	..	1	..	..	..	1	..	1	18	2	20
177. Other Accidental Poisonings ..	..	..	..	..	..	..	..	..	..	6	..	6
178. Burns (by Fire)	6	..	6	2	..	2	..	..	..	647	140	787
179. Burns (other than by Fire) ..	..	..	..	..	..	..	35	..	35	15	1	16
180. Suffocation (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..
181. Poisoning by Gas (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..
182. Drowning (Accidental)	..	..	..	..	..	..	..	..	..	1	..	1
183. Wounds (by Firearms, War excepted)	..	..	..	3	..	3	..	..	..	1	..	1
184. Wounds (by Cutting or Stabbing Instruments)	3	..	3	1	..	1	1	..	1	2,710	140	2,850
185. Wounds (by Fall)	1	..	1	..	..	..	..	..	..	886	126	1,012
186. Wounds (in Mines or Quarries) ..	..	..	..	..	..	..	..	..	..	107	..	107
187. Wounds (by Machinery).. ..	..	..	..	..	1	1	..	..	..	1,768	20	1,788
188. Wounds (Crushing, *e.g.*, Railway Accidents, etc.)	2	..	2	..	1	1	..	..	..	12	11	23
189. Injuries inflicted by Animals. Bites. Kicks, etc.	..	..	..	1	1	2	..	..	..	502	146	648

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	European Officials			European General Population (Non-official)			Non-European Officials (including Asiatics)			Native General Population (including Asiatics)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XIV.—Affections produced by External Causes—(*Contd.*).												
190. Wounds inflicted on Active Service	1	..	1	..	..	..	..	..	..	..	..	..
191. Executions of Civilians by Belligerents	..	..	..	..	..	..	..	..	..	..	..	..
192. *A.*—Over Fatigue	..	..	..	..	..	..	..	..	..	..	..	..
B.—Hunger or Thirst	..	..	..	..	..	..	..	..	..	..	..	..
193. Exposure to Cold, Frostbite, etc.	..	..	..	..	..	..	..	..	..	8	4	12
194. Exposure to Heat—												
Heatstroke	..	..	..	..	..	..	..	..	..	..	..	..
Sunstroke	..	..	..	..	..	..	..	..	..	..	..	..
195. Lightning Stroke	..	..	..	..	..	..	..	..	..	..	..	..
196. Electric Shock	..	..	..	..	..	..	..	..	..	..	..	..
197. Murder by Firearms	..	..	..	..	..	..	..	..	..	..	..	..
198. Murder by Cutting or Stabbing Instruments	..	..	..	..	..	..	..	..	..	..	..	..
199. Murder by other means	..	..	..	..	..	..	..	..	..	..	..	..
200. Infanticide (Murder of an Infant under one year	..	..	..	..	..	..	..	..	..	..	..	..
201. *A.*—Dislocation	..	..	..	..	..	..	..	..	..	58	15	73
B.—Sprain	2	..	2	..	..	..	..	..	..	300	52	352
C.—Fracture	..	..	..	..	..	..	..	..	..	23	1	24
202. Other External Injuries	97	2	99	90	23	113	455	..	455	19,519	1,741	21,260
203. Deaths by Violence of unknown cause	..	..	..	..	..	..	..	..	..	..	..	..
XV.—Ill Defined Diseases.												
204. Sudden Death (cause unknown)												
205. *A.*—Diseases not already specified or ill-defined—	..	..	..	..	..	..	..	..	..	..	..	..
Ascites	1	..	1	..	..	..	..	..	..	280	44	324
Oedema	..	..	..	..	..	..	..	..	..	7	7	14
Asthenia	..	..	..	..	..	..	..	..	..	..	..	..
Shock	..	..	..	..	..	..	..	..	..	60	2	62
Hyperpyrexia	..	..	..	..	..	..	..	..	..	..	..	..
Sun Traumatism	..	..	..	..	..	..	..	..	..	..	..	..
B.—Malingering	..	..	..	..	..	..	..	..	..	27	..	27

RETURN OF DISEASES—OUT-PATIENTS—(*Contd.*).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS.	..	..	..	..	..	..	..	..	..	612	202	814
GRAND TOTAL ..	548	20	568	443	228	671	2,875	..	2,875	150,339	36,206	186,545
EUROPEANS—												
Officials	..	..	..	..	..	..	..	..	..	..	..	..
Non-officials	..	..	..	..	..	..	..	..	..	..	..	..
ASIATICS—												
Officials	..	..	..	..	..	..	..	..	..	..	..	..
Non-officials	..	..	..	..	..	..	..	..	..	..	..	..
AFRICANS—	..	..	..	..	..	..	..	..	..	..	..	..
SURGICAL OPERATIONS—												
Under General Anæsthesia ..	..	..	..	3	1	4	..	..	..	..	..	..
Others	2	..	2	2	1	3	2	..	2	450	156	606

TABLE VII.—STATISTICS REGARDING ENTERIC FEVER AMONG EUROPEAN RESIDENTS IN THE COLONY AND PROTECTORATE OF KENYA DURING 1928.

Total number admitted on account of Enteric.				Number admitted who had been previously inoculated against Enteric.		Number of cases who died.				Total number inoculated against Enteric Fever during the year.	
Officials.		Non-Officials.		Officials	Non-Officials	Officials	Non-Officials	Officials	Non-Officials	Officials	Non-Officials
Cases	Deaths	Cases	Deaths								
2	..	9	..	..	..	..	..	..	..	..	..

The occurrence of the cases was as follows :—

Mombasa ..	.. 8
Kisumu ..	.. 1
Nairobi ..	.. 1
Eldoret ..	.. 1
TOTAL	.. 11

APPENDIX A.

ANNUAL REPORT OF THE PROCEEDINGS OF THE BOARD OF HEALTH FOR THE YEAR 1928.

The Public Health (Building) Ordinance, Chapter 125 of the Revised Edition of the Laws of Kenya.

1. The membership of the Board consisted of :—
The Director of Medical and Sanitary Services (President),
The Commissioner for Local Government, Lands and Settlement,
The Director of Public Works,
The Surveyor General,
The Deputy Director of Sanitary Service,
A. C. Tannahill, Esq.

2. Summary of work done :—

(*a*) Meetings held during the year	7
(*b*) Applications for sub-divisions outstanding from previous year	8
(*c*) Applications for sub-divisions submitted during the year	24
(*d*) Applications for sub-divisions approved during the year	17
(*e*) Applications for sub-divisions not approved during the year	7
(*f*) Applications for sub-divisions re-submitted	5
(*g*) Applications for sub-divisions cancelled or not proceeded with	8
(*h*) Applications for sub-divisions outstanding at the end of the year	Nil.

3. As in previous years, the Board has rejected certain proposals for the division of estates on the grounds that close development on these sites is undesirable in the absence of a satisfactory system of drainage, or of any organisation for the removal and disposal of refuse and night soil.

The problems connected with scattered development on the outskirts of Nairobi and other large townships have become increasingly more difficult. It is hoped that by the Local Government (Municipalities) Ordinance, 1928, which came into operation on the 27th November, 1928, a means of solution to these has now been found.

4. The Board addressed Government recommending the extension of the boundaries of Gilgil and Elburgon townships, so as to include certain lands the subject of division.

5. Copies of all plans of proposed divisions submitted to the Board were forwarded before approval of the Local Authority concerned with a request for their recommendations. As a result of this procedure the Board has been favoured with many helpful suggestions.

6. During the course of their deliberations the Board have in some cases found it necessary before finally approving schemes of proposed sub-divisions, to require the applicants to construct certain roads, roadside drains, culverts, etc., indicated on the plans.

In two cases the Board required the applicants to enter into an agreement and to give a bond for the construction, when so required by the Board, of certain roads, etc., indicated on the plans.

Legal proceedings were taken in two cases of contravention of the provisions of the Public Health (Building) Ordinance, 1913, and in each case a penalty was imposed.

8. During the year a Bill to provide for the Regulation and Control of Divisions of Land was prepared by Government and forwarded to the Board for their comments and recommendations. This became law, and the new Ordinance, designated the Public Health (Division of Lands) Ordinance, 1928, came into operation on 31st December; under it the previously existing Board ceases to exist. A new Board with wider powers will be set up with the Colonial Secretary as Chairman.

9. During its existence the Board held ninety-five meetings, and has, among other things, dealt with some one hundred and thirty applications.

JOHN L. GILKS,
President.

APPENDIX B.

ANNUAL REPORT OF THE PROCEEDINGS OF THE CENTRAL BOARD OF HEALTH FOR THE YEAR 1928.

The Public Health Ordinance.

(*Cap.* 124, *Revised Edition of the Laws of Kenya.*)

1. *Members of the Board, Resignations, New Appointments.*—(*a*) The membership of the Board consisted of :—

The Hon. Director of Medical and Sanitary Services, J. L. Gilks, Esq., M.L.C., M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.R.C.S. (Edin.), *Chairman.*

The Deputy Director of Sanitary Service, A. R. Paterson, Esq., M.B., Ch.B. (Glas.), D.P.H. (Camb.), D.T.M. & H. (Camb.).

G. V. W. Anderson, Esq., M.B., B.S. (Lond.), F.R.C.S. (Eng.).

W. H. Kauntze, Esq., M.B.E., B.A., M.D., Ch.B., D.P.H. (Vict. Univ.), M.R.C.S. (Eng.), M.B., B.S., L.R.C.P. (Lond.).

G. V. Maxwell, Esq., M.L.C.

H. L. Sikes, Esq., M.L.C., B.A., B.E., M.Inst.C.E., F.G.S.

A. J. Jex-Blake, Esq., M.A., M.D. (Oxon.), F.R.C.P. (Lond.).

T. A. Wood, Esq., M.L.C., C.M.G., M.B.E.

C. R. Davidson, Esq., A.M.I.C.E.

F. J. C. Johnstone, Esq., M.D., Ch.B. (Edin.), D.P.H. (R.C.P.S., Edin., and R.F.P.S., Glas.), D.T.M. (L'pool), *Secretary.*

(*b*) The Deputy Director of Sanitary Service was absent on leave during the earlier part of the year, and his position was filled by the Acting Deputy Director of Sanitary Service, Dr. F. J. C. Johnstone.

(*c*) Dr. F. J. C. Johnstone was appointed as Secretary of the Board on the 18th June, 1928.

(*d*) The Hon. Mr. G. V. Maxwell proceeded on leave towards the end of the year, and C. M. Dobbs, Esq., M.L.C., B.A. (Dub.), was appointed as a substitute member on the 29th December, to act during the Hon. Mr. Maxwell's absence from the Colony.

(*e*) There were no resignations during the year.

2. *Meetings of the Board.*—Four meetings of the Board were held during the year.

3. *Regulations submitted to the Board for confirmation.*—The following Regulations were submitted to the Board for approval and confirmation in accordance with the provisions of section 16 of the Ordinance :—

(*a*) The Mombasa Township (Hours of Slaughtering) Rules, 1928.—These Rules, which are designed to control the hours of slaughtering and to make provision for more efficient meat inspection, were approved by the Board.

(*b*) Amendment of Nairobi Township By-law No. 36.—The object of the suggested amendment was to exclude flats from the by-law, which provided that in the case of buildings used for residential purposes not more than one-half the plot should be built over. The Board, after consideration, came to the conclusion that no sufficient case had been advanced in favour of the exemption of flats from the By-law, and as there were definite objections on public health grounds the suggested amendment was not approved.

4. *Other matters considered by the Board during the year* :—

(*a*) Draft Drainage and Latrine Regulations.—The Draft Drainage and Latrine Regulations, after detailed consideration by a committee appointed for the purpose, received the approval of the Board and were forwarded to Government for submission to His Excellency the Governor. The Draft Regulations were published for criticism in the Official Gazette of the 22nd September, and a number of comments and criticisms were received by Government, which were referred to the Board. These were considered by the Board at a meeting at which the Government Municipal and Town Planning Engineer was present. A final draft of the Regulations was subsequently submitted to Government, and is at present being considered by the Hon. Attorney General.

(*b*) Draft Building Rules.—The Draft Building Rules received further consideration by the Board. It was, however, felt that whilst the Rules were useful for the purpose for which they were designed, namely, the control of building development in the smaller townships, a comprehensive modern code of building rules was urgently required. As the services of a Municipal and Town Planning Engineer were now available, the Board decided to direct the attention of Government to the neecssity of preparing such a code at an early date.

(*c*) Control of the Practice of Midwifery.—Draft Rules for the control of unqualified midwives had been prepared by the Medical Department and were considered by the Board. The Board approved of the Rules, which provided for the registration of such persons, and as the Nairobi Municipal Council had already approved of the principle of registration it was decided to forward the Draft Rules to the Council for consideration. If approved, it was suggested that they should be submitted to the Board for confirmation in the usual way. The Municipal Council, however, did not proceed with the matter, and the Draft Rules, with some amendments suggested by the Hon. Attorney General, were subsequently submitted to Government by the Board.

(*d*) Lease Restrictions on Township Plots.—A letter addressed to the Hon. Colonial Secretary by the Nakuru Chamber of Commerce and the Nakuru Township Association on the subject of the use of Township plots for the combined purpose of business and residence, a copy of which was sent to the Board, received consideration. The Board felt that matters of this sort must to a large extent be settled locally and that the zoning of towns provided the solution to the problem. As the Board was informed that Government was considering the question the Board asked that its views be placed before Government should an expression of opinion be desired.

(*e*) Registration of Nursing Homes—One nursing home, situated in the Uasin Gishu District, was registered by the Board during the year.

(*f*) Draft Rats and Mice Destruction Regulations.—Draft Rats and Mice Destruction Regulations, which had been prepared by the Medical Department, were considered by the Board. These Regulations, which were drafted on the lines of the English Act and which were merely an amplification of the present law, were approved by the Board and submitted to Government.

(*g*) Notification of Infectious Disease.—On the recommendation of the Board, Government added blackwater fever and encephalitis lethargica to the list of notifiable infectious diseases, and removed measles and whooping cough from the list.

(*h*) Draft Sale of Food and Drugs Bill.—A Draft Bill to control the sale of food and drugs, which had been prepared by the Medical Department on the lines of the Food and Drugs Act in England, was considered by the Board. The Draft Bill, which was designed to provide for the more efficient control of the sale of food and drugs and which had been prepared at the request of medical officers of health and several public bodies, received the approval of the Board and was submitted to Government.

(*i*) Malaria Control.—The attention of Government was again directed by the Board to the numerous artificial mosquito breeding grounds which existed throughout the Colony as a result of the excavation of borrow pits in connection with the construction of roads and railways. The Board asked that the importance of the matter might be brought by Government to the notice of the Hon. Director of Public Works, the Hon. General Manager of the Railway, and to all Road Boards, Local Authorities, and Administrative Officers in charge of districts throughout the Colony and Protectorate.

JOHN L. GILKS, *Chairman.*
F. J. CARLYLE JOHNSTONE, *Secretary.*

APPENDIX C.

DIGO DISTRICT.

Summary of Statistics.

HELMINTHIC TREATMENT.

Total male adults attending for treatment	15,112
Total female adults attending for treatment	15,610
Total male children attending for treatment	11,246
Total female children attending for treatment ...	10,859
Total ...	52,827

Male children exempted from treatment	774
Female children exempted from treatment	714
Pregnant women exempted from treatment	1,127
Others exempted from treatment	537
Total ...	3,152

Total numbers attending for treatment	52,827
Total numbers exempted from treatment	3,152
Total number treated	49,675

HÆMOGLOBIN ESTIMATIONS.

Total individuals examined—	
Adults	5,604
Children	3,207
Total ...	8,811

Average percentage hæmoglobin—	
Adults	61.4%
Children	59.2%
Average ...	60.6%

Lowest percentage hæmoglobin recorded	15%
Highest percentage hæmoglobin recorded	95%

(*Note.*—The estimations were made with a Talliquest Hæmoglobinometer.)

SPLEEN INDEX.

Total adults examined	4,233
Number with spleens enlarged	1,578
Percentage with spleens enlarged	37.3%
Total children examined	8,973
Number with spleens enlarged	5,803
Percentage with spleens enlarged	64.7%

YAWS.

(a) *Infective.*

Total adults examined	30,600
Cases of infective yaws	69
Percentage incidence of infective yaws	0.2%
Total children examined	22,000
Cases of infective yaws	521
Percentage incidence of infective yaws	2.4%

(b) *Tertiary.*

Total adults examined	3,749
Number affected	2,144
Percentage affected	57.2%
Total children examined	5,929
Number affected	1,732
Percentage affected	29.2%

POT BELLIES IN CHILDREN.

Total children examined	3,589
Number of pot bellies	1,849
Percentage of pot bellies	51.5%

PYORRHŒA.

Total adults examined	4,428
Number affected	3,279
Percentage affected	74.5%
Total children examined	4,998
Number affected	2,903
Percentage affected	58%

PULMONARY TUBERCULOSIS.

Total adults examined	3,082
Number affected	713
Percentage affected	20.2%
Total children examined	2,110
Number affected	195
Percentage affected	9.2%

NUTRITION.

Total individuals examined	5,365
Percentage nutrition—	
Poor	16.2%
Fair	62.7%
Good	21.1%

VENEREAL DISEASES.

Total adults examined	3,316
Number of cases of syphilis	22
Percentage cases of syphilis	0.6%
Number of cases of gonorrhœa	148
Percentage cases of gonorrhœa	4.4%

URINARY SCHISTOSOMIASIS.

Total adults examined	2,582
Number affected	312
Percentage affected	12%
Total children examined	4,379
Number affected	745
Percentage affected	17%

Other Diseases.

The following diseases not recorded in the foregoing tables were observed among the groups of people examined during the campaign :—

Disease.	*Number observed.*
Respiratory (excluding tuberculosis)	718
Cardiac	4
Abdominal	285
Tumours (various)	41
Diseases of eye—	
(1) Conjunctivitis	432
(2) Cataract	201
(3) Corneal ulcer	113
(4) Glaucoma	2
(5) Exophthalmos	4
(6) Strabismus	9
Malaria (acute)	203
Nervous diseases	37
Diseases of women	13
Diseases of skin—	
(1) Scabies	476
(2) Tinea imbracata	62
(3) Ringworm	13
(4) Others	5
Diseases of the ear	49
Ulcers (non-yaws)	286
Hydrocele	146
Hernia	113
Elephantiasis	44
Leprosy	32
Ganglion	6
Orchitis	6
Whooping cough	194
Hepatic enlargement	501
Others	43

COLONY AND PROTECTORATE OF KENYA.

ANNUAL REPORT

OF THE

MEDICAL RESEARCH LABORATORY

FOR THE YEAR 1928.

By

W. H. KAUNTZE, M.D., D.P.H.
Deputy Director of Laboratory Services.

CONTENTS.

PAGE.
STAFF 105

A.—ADMINISTRATIVE SECTION.

1. Changes in Staff 106
2. Leave 106
3. Organisation 106
4. Research 107
List of Papers published by the Staff in 1928 107
(*a*) Malaria 108
(*b*) Yaws 108
(*c*) Intestinal Helminths 108
(*d*) Nutritional Problems 108
(*e*) Plague 108
(*f*) Coli Vaccines 109
(*g*) Post-mortem Examinations 109

B.—SEROLOGICAL SECTION.

1. Wassermann and Sigma Tests 109
2. Agglutinations 110

C.—CALF LYMPH SECTION.

1. Staff 111
2. Production of Calf Lymph 111
3. Distribution of Lymph 111
4. Testing of Lymph 111
5. Production of Calf Lymph, 1928, Summary 111

D.—PATHOLOGICAL SECTION.

1. Histological Examinations 116
2. Post-mortem Examinations 117

E.—BACTERIOLOGICAL SECTION.

Main Infective Conditions 118
Preparation of Vaccines 119
Miscellaneous 119
Research 119
F.—HELMINTHOLOGICAL & PROTOZOOLOGICAL SECTIONS 120
Record of Fæces Examined 125
Record of Bloods Examined 126

G.—SECTION OF MEDICAL ENTOMOLOGY.

1. Organisation 121
2. Mosquitoes 121
3. Fleas 122
4. Myiasis 122
5. Ticks 123
6. Tsetse Fly 123
7. General 123
H.—BIOCHEMICAL SECTION 123

KENYA COLONY AND PROTECTORATE.

MEDICAL RESEARCH LABORATORY.

STAFF, 1928.

DEPUTY DIRECTOR OF LABORATORY SERVICES :
W. H. Kauntze.

SENIOR BACTERIOLOGIST :
R. P. Cormack.

ASSISTANT BACTERIOLOGISTS :
H. D. Tonking.
F. W. Vint.

GOVERNMENT ANALYST :
M. H. Fox.

BIOCHEMICAL OFFICER :
D. Harvey.

MEDICAL ENTOMOLOGISTS :
C. B. Symes.
G. H. E. Hopkins.

LABORATORY SUPERINTENDENT :
F. A. Bailey.

LABORATORY ASSISTANTS :
J. A. Bell.
J. S. McDonald.
H. M. Nefdt.
L. Burton (Learner), from January 26th, 1928.
W. E. Grainger (Learner).
R. Brunsden (Learner), until June, 1928.
T. Jones (Learner).
S. J. Moore (Learner), from July 1st, 1928.
Ramji Dass.
W. Pema.
J. St. A. M. de Souza.
F. Mohamed.
Elisha Nyalondo.
Gideon.

MALARIAL FIELD OVERSEERS :
J. O. Harper, from October 10th, 1928.
A. Herd, from October 10th, 1928.

CLERKS :
Miss J. M. C. Millett.
Miss K. L. Grant, until March, 1928.
Miss E. A. Barry, from April 1st, 1928.
Miss K. M. Trood, from December 27th, 1928.

CLERK AND STOREKEEPER :
Max de Souza.

ANNUAL REPORT OF THE MEDICAL RESEARCH LABORATORY, KENYA COLONY AND PROTECTORATE, FOR 1928.

A.—ADMINISTRATION.

1.—Changes in Staff.

Miss E. A. Barry appointed Clerk, April 1st, 1928.

Capt. R. P. Cormack appointed Senior Bacteriologist, May 1st, 1928 (transferred from Uganda).

Mr. J. O. Harper appointed Malarial Field Overseer, October 10th, 1928.

Mr. A. Herd appointed Malarial Field Overseer, October 10th, 1928.

Miss K. M. Trood transferred from Medical Headquarters for duty as Clerk, December 27th, 1928.

2.—Leave.

Mr. Max de Souza returned from leave on March 2nd, 1928.

Mr. Fox proceeded on leave on March 5th and returned from leave on October 1st, 1928.

Mr. Bell returned from leave on October 31st, 1928.

3.—Organisation.

The Department, indeed all workers on human nutrition, suffered a severe loss by the untimely death of Dr. Henderson, who was lent in 1926 by the Rowett Research Institute to this Colony to conduct an investigation into the causation of tropical ulcers. During his service in Kenya this officer was noted for his clarity of thought and depth of special knowledge, as well as for the tact and ready helpfulness which made this first step towards the establishment of basic research into special problems so successful. His death at the outset of what promised to be a brilliant scientific career must be deplored by all.

Dr. Cormack's appointment as Senior Bacteriologist in May, 1928, completed the staff as sanctioned in the Estimates for 1928.

The work of the Laboratory has been continued during 1928 on the lines of policy laid down in previous reports. A clinical laboratory in charge of a European Laboratory Assistant, has been opened in Mombasa, and, as can be seen from the record of work in the appendix to this report, has fully justified its existence. A small building was obtained at the Native Civil Hospital, Nairobi, and converted into a laboratory where the routine clinical examinations of the hospital are now carried out by the European Laboratory Assistant with the help of three Africans.

The training of European and African laboratory assistants has proceeded steadily, so that senior officers are now able to devote more time to investigational problems instead of routine laboratory examinations and it has been possible to post an African as a laboratory assistant at most station hospitals to conduct the simpler microscopical examinations of blood, fæces and pathologic exudates, under the supervision of the medical officers in charge of the hospitals.

The increase in numbers of African laboratory assistants has rendered the problem of discipline more acute than ever. Fines seem to have no effect, and the threat of discharge is futile, as these boys well know that they can obtain employment as houseboys or clerks at wages considerably higher than those sanctioned for laboratory assistants. Furthermore, as has happened on more than one occasion, an African having been in training for two or three years and just becoming useful decides that he prefers some other work and leaves, as he is entitled to, at the end of the month, often with no more than a day or two days' notice. The hospital to which he is attached is then left without laboratory assistance until another African has been trained to replace the departed one. Some system of enlistment with proper disciplinary control is essential. It would then be possible to arrange a proper system of reliefs if boys wished to leave at the close of their period of service; while in many cases, the boys, having served seven years or so, would have settled down to laboratory work, and be willing to re-engage for a further period of service. Later, when education has taught the African that it is essential to devote oneself for economic reasons to one occupation or another, it will be possible to dispense with the enlistment system; but at present, for the sake of the African himself, it is essential.

The suggestion to unite all Government laboratories in one institution was again put forward this year, this time in conjunction with the proposed Coryndon Memorial Museum. A statement of the difficulties which would arise sufficed to cause the abandonment of the project.

In the later months of the year, sanction was given for the building of the new Laboratory, plans of which have been put forward constantly since 1920. The site chosen for the new building is adjacent to the Native Hospital, and adequate provision has been made to house all the present laboratory staff, and any additional workers who may become necessary in the next few years. It will be possible to offer the hospitality of the Laboratory to research workers from Europe lent temporarily to the Colony for the purpose of investigating particular problems of disease. Accommodation also will be available for more permanent teams of research experts engaged on the larger problems of malaria, yaws, helminthiasis and plague, thus rendering possible the carrying out of that policy which was enunciated in the Annual Report for 1925, that it is essential that research work and routine work should be carried out under the same control, and by staff working in the closest conjunction, so that both sides of laboratory investigation, routine and research, should benefit immediately by results obtained by either, and that practical problems of disease should be kept constantly before research workers. This policy enables the laboratory to expand to meet whatever demands are made on it, either for routine investigations or basic research, and ensures that major problems of disease can be investigated at any time by a team of research workers, whether drawn from Europe or the Colony, with little more expenditure than the actual salaries of the workers themselves and the cost of their transportation.

4.—RESEARCH.

The expansion of hospital work in the Colony has led to much heavier demands on the Laboratory for clinical investigations, but the rapidity of increase is now showing a falling off, owing to the opening up of the clinical laboratories at the hospitals themselves. This decentralisation policy requires, however, more supervision than has hitherto been available with the staff at our disposal, though it is hoped that in the future it will be possible to visit each hospital laboratory at least twice a year. It is obvious now that the present Laboratory staff is insufficient to carry out anything more than routine examinations and investigation into the smaller problems of disease in Kenya. To conduct research requires a team which is freed for the time being from the distractions of routine work. If the major problems of disease in the Colony are to be treated, money must be spent, either in the way of obtaining specially qualified men from Europe or America, or of providing additional assistance to release one or more of the present staff for pure research work.

The following articles have been published during 1928 by members of the Laboratory staff in the Journal noted:—

F. P. G. de Smidt:

- "Bacillus pestis: Agglutination and Absorption Tests." (Kenya and East African Medical Journal, February, 1928.).
- "Nairobi Plague Prophylactic: Notes on its Potency." (Kenya and East African Medical Journal, March, 1928.)
- "Bacteriology of Nairobi Plague Prophylactic." (Kenya and East African Medical Journal, June, 1928.)

F. W. Vint:

- "Gall Stones in a Native Child." (Kenya and East African Medical Journal, May, 1928.)

C. B. Symes:

- "Notes on Anophelines and Malaria in Kenya." (Kenya and East African Medical Journal, August, 1928.)

(*a*) *Malaria.*

The work that has been done during 1928 on this subject is recorded in the report of the Section of Medical Entomology. The apparent increased incidence of the disease in the Colony has led to the appointment of two malarial field overseers, who, at the close of the year, were conducting intensive mosquito surveys in the Uasin Gishu and Trans Nzoia areas on farms selected for their bad malarial history. An investigation of the Taveta Native Reserve has revealed a very high splenic index, and an extensive infestation with *A. funestus.* This is but the preliminary to a more complete examination of the malaria problem in this area.

(*b*) *Yaws.*

Collection of data obtainable from Sigma results has proceeded during the year, but the lack of information which should accompany the blood samples makes the drawing of any conclusion impracticable. The search for a more effective preparation for treatment is still in progress. Tetra-bismuth tartrate was made and tried, as is mentioned in the report of the Biochemical Section. Unfortunately, although the first sample made gave results of the greatest promise, later ones failed to be as effective, owing, apparently, to the drug being a mixture of bismuth salts and the same chemical combination failing to take place even though the same method was used on each occasion in the manufacture. The preparation of a suspension of extremely finely divided metallic bismuth in glucose gives promise of greater success.

(*c*) *Intestinal Helminths.*

An investigation was carried out for the Medical Officer, Digo District, on the inhabitants of a selected village in the Coast area south of Mombasa, whereby it was sought to determine by the Clayton Lane direct centrifugal flotation method, the average count of ancysostome eggs in the fæces of the natives and to correlate this count with clinical signs. As it is proposed to examine the same people a year later, and again count the helminth eggs in the fæces, it will be possible to determine the effect of improved sanitation and deparasitisation which was carried out immediately after the first count.

The possibility of splenic enlargement in malarial districts being due to infection with *Schistosomum mansoni* must not be lost sight of, as it would result in a false rise in the splenic index. Such may account to some extent for the spleen rates in the Taveta Reserve, but its investigation is difficult, both on account of the periodicity in excretion of the ova, and also of the dislike of the natives to bring fæcal specimens; indeed, as the adult male is, by custom, not supposed to defæcate at all when he has reached manhood, it is almost impossible to obtain any samples from men.

The effect of helminthiasis on the general nutrition of the native is one of the research problems which demands investigation at the earliest possible moment, and in Kenya at least is only secondary to the problem of malaria.

(*d*) *Nutritional Problems.*

The work initiated by Dr. Kelly and Dr. Henderson has been carried on by the latter officer until his fatal illness, and by Dr. Harvey. Important facts showing the value of an increase of calcium in the African diet were elicited by an experiment carried out at the Nairobi Prison; while another investigation into the effects of additions of minerals or skimmed milk was undertaken at the Kabete Reformatory. Dr. Foster meanwhile carried on his collection of native foodstuffs which were sent to the Rowett Institute for examination.

(*e*) *Plague.*

Research on plague vaccine has been continued during the year, and Dr. de Smidt has published two papers showing some of the results of his work. The search for a vaccine giving less local and general reaction than Haffkine's plague prophylactic has not yet succeeded, but the dependence of the value of the vaccine on dissolved bacterial protein as well as on its content of bacterial bodies has been demonstrated, hence the necessity for a period of autolysis in its preparation. A lysed vaccine is the next step towards the achievement of a non-toxic prophylactic.

(*f*) *Coli Vaccines.*

These are in as great, if not greater, demand than ever for cases of chronic rheumatism and rheumatoid arthritis. Dosage has been reduced even further, so that it is now impossible to say that the results are due to a non-specific protein reaction.

(*g*) *Post-mortem Examinations.*

These have increased so largely in number during the year that they require the whole-time services of one pathologist. The work done has been most valuable, as it has led to a much more accurate knowledge of the pathological processes of disease in Africans, and the correlation of these with clinical findings should give more assurance in diagnosis in obscure cases.

B.—SEROLOGICAL SECTION.

1.—Wasserman and Sigma Tests.

During 1928 there has been an increase of well over twenty-five per cent. in the number of bloods sent in for examination. The clinical histories submitted with the sera were of an even lower standard than in previous years, in a large majority of cases being confined to a statement of the fact that the blood sent was venous in origin, which does not materially help in coming to a conclusion as to the condition of the patient.

Early in the year illnesses of various kinds broke out in the Laboratory animals, the guinea pigs especially suffering from pneumonia. This epidemic, coupled with the difficulty in breeding these animals, rendered a constant supply of fresh complement impossible. Finally, it was decided to perform the Sigma reaction on all sera as a routine, using the Wasserman reaction only as a control.

This change of the routine test caused some confusion as to the interpretation of results, as many of the medical officers, though familiar with the principle of the test, were a little uncertain as to the exact meaning of the units given; but after explanation, the Sigma as a routine test for the diagnosis of syphilis and yaws now appears to be more popular than the Wasserman reaction, probably on account of the ease and accuracy with which the progress of a case under treatment can be followed.

During the dry season some trouble was experienced in the cleaning and drying of the tubes used, owing to the frequent dust storms which swept through the Laboratory. Various methods of cleaning were tried to eliminate handling of the tubes, but after many experiments the manual method was reverted to as giving the most consistently satisfactory results. A slight change in technique was introduced—the using of a burette giving a constant drop for the introduction of the saline. This was found to accelerate the putting up of a batch of tests by about half an hour, besides being much less fatiguing than counting the drops from a bulb pipette.

Below is a table giving the negative and positive results for the year, and a rough idea of the number of units in the positive reactions :—

Wassermann's Reaction.	*Blood Sera.*
Positive	188 = 54.03%
Negative	160 = 45.97%
Anti-complementary sera	16
Contaminated sera	11
Total ...	375

Wassermann's Reaction.	*C. S. Fluid.*
Positive	1
Negative	1
Total ...	2

Sigma Reaction.	*Blood Sera.*
Sera showing some degree of floculation ...	1264 = 80.80%
Sera showing no degree of floculation ...	691 = 19.18%
Sera showing less than four sigma units ...	370
Sera received contaminated or hæmolysed	105
Sera insufficient for complete test ...	27

Sigma Reaction.	*C. S. Fluid.*
No degree of floculation in any	7
Total sera received	2335
Total tests performed (W.R. & S.)	2339

Of the above results, on subtracting the 370 tests which were below four units, the percentage of positives drops to 57.20%.

2.—AGGLUTINATIONS.

Agglutinations were performed on 965 sera during the year; an increase of some 33 per cent. on last year. The technique used was the Dreyer. No demands were made for sets of dead cultures for performing tests by Garrow's method in the outstations.

The sera were tested against B. typhosus, B. paratyphosus A, B. paratyphosus B, and B. paratyphosus C. The putting up of the sera against cultures of Proteus X19, Br. Melitensis, Br. paramelitensis and B. abortus was discontinued as a routine, only being done when specifically demanded, as most of the cases were from patients suspected to be suffering from typhoid.

The inclusion of B. paratyphosus C in the routine test was fully justified by the number of dominating titres obtained with cultures of this organism.

Table showing the number of sera in which agglutination occurred of one organism to a degree appreciably higher than that of any other. All reactions which took place in a dilution of 1 in 50 or over are recorded :—

Bact. typhosum	214
Bact. paratyphosum A	16
Bact. paratyphosum B	95
Bact. paratyphosum C	7
Br. paramelitensis	1

Table showing the number of sera in which agglutination of two or more organisms occurred to an equal degree :—

Bact. typhosum and Bact. paratyphosum A ...	11
Bact. typhosum and Bact. paratyphosum B ...	16
Bact. typhosum and Bact. paratyphosum C ...	3
Bact. typhosum and Bact. paratyphosum A & B ...	13
Bact. typhosum and Bact. paratyphosum B & C ...	1
Bact. paratyphosum A and B	10
Bact. paratyphosum A, B and C	2
Bact. paratyphosum B and C	7

Table showing sera in which agglutinations of less than 1 in 50 occurred :

Bact. typhosum	19
Bact. paratyphosum A	2
Bact. paratyphosum B	25
Bact. paratyphosum C	1
Bact. typhosum and Bact. paratyphosum A ...	5
Bact. typhosum and Bact. paratyphosum B ...	3
Bact. typhosum and Bact. paratyphosum B and C ...	1
Bact. paratyphosum A and B	2

Widal's Reactions.

Total sera examined	965
Total sera showing any degree of agglutination ...	454
Total showing no agglutination	511

C.—CALF LYMPH SECTION.

1.—Staff.

Here there were no changes, the staff consisting of an Indian Laboratory Assistant and four Africans under the direct supervision of an Assistant Bacteriologist.

The breeding of the experimental animals has been entrusted to an European Laboratory Assistant who, by careful selection and more scientific principles, hopes to raise the standard in size and health of these animals—at present very low.

2.—Production of Calf Lymph.

Early in the year a few cases of smallpox occurred in Nairobi; from these lymph was collected and inoculated into calves and rabbits. The reactions caused were unfortunately so poor that it was impossible to start a new strain.

The method used for production remained unaltered, no chloroform being employed for sterilization.

3.—Distribution of Lymph.

In addition to the usual standing orders for the various outstations, lymph was supplied to Italian Somaliland, to deal with an outbreak of smallpox. This lymph was transported by air.

4.—Testing of Lymph.

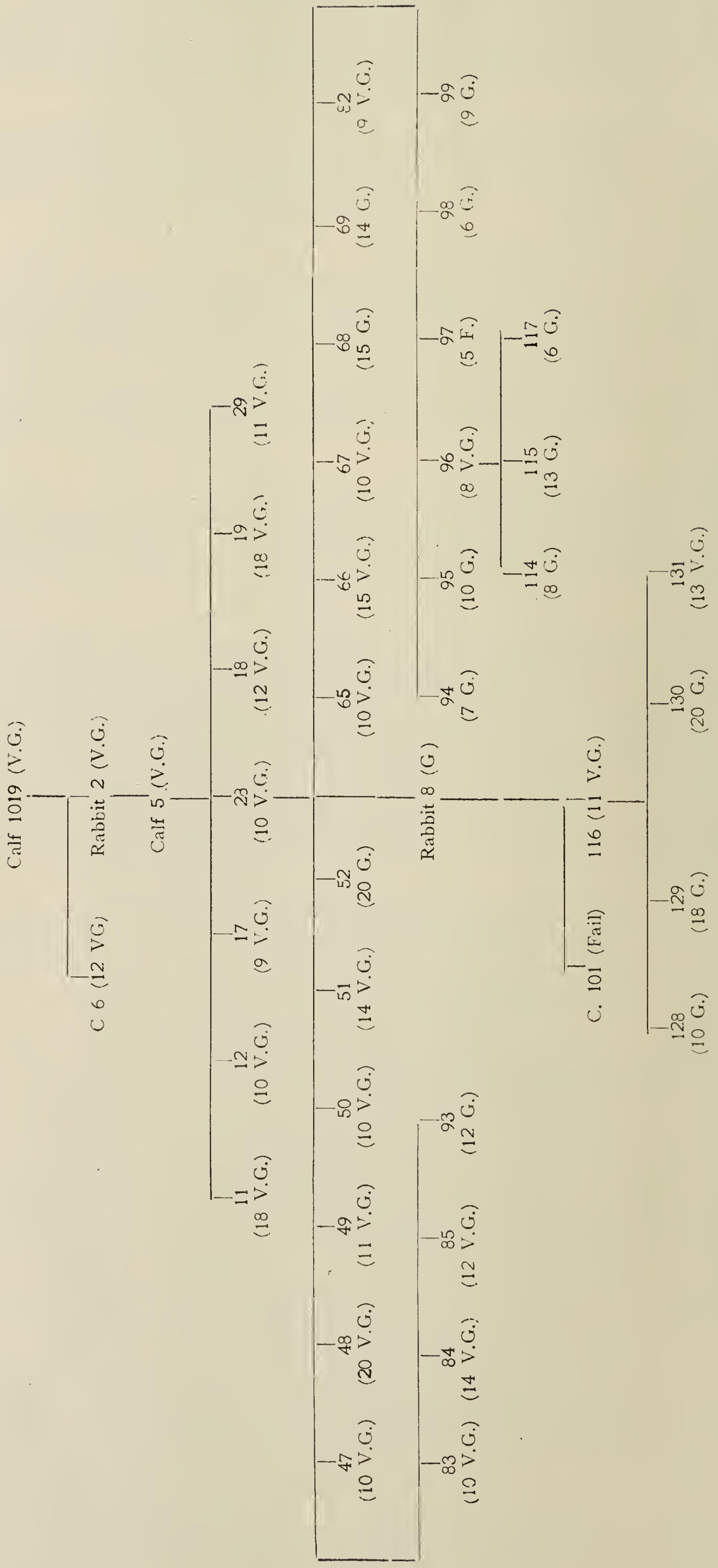
A few isolated reports were received from distant outstations showing that their percentage of successful primary inoculation was not so high as it should have been. The officer in charge of the lymph section then carried out a series of vaccinations on the children of the various Indian girls' schools, using lymph from the same batches as those reported to be unsatisfactory. Good results were obtained. To test out the lymph still further, about a hundred police recruits were done, with the result that primary vaccinations were successful in every case. The failure of the lymph in the outstations was thought to be due to :—

1. Long duration in transit of lymph.
2. Great heat to which lymph is subjected, both during the journey and on arrival.
3. Difficulty in procuring shade for the actual vaccinations.

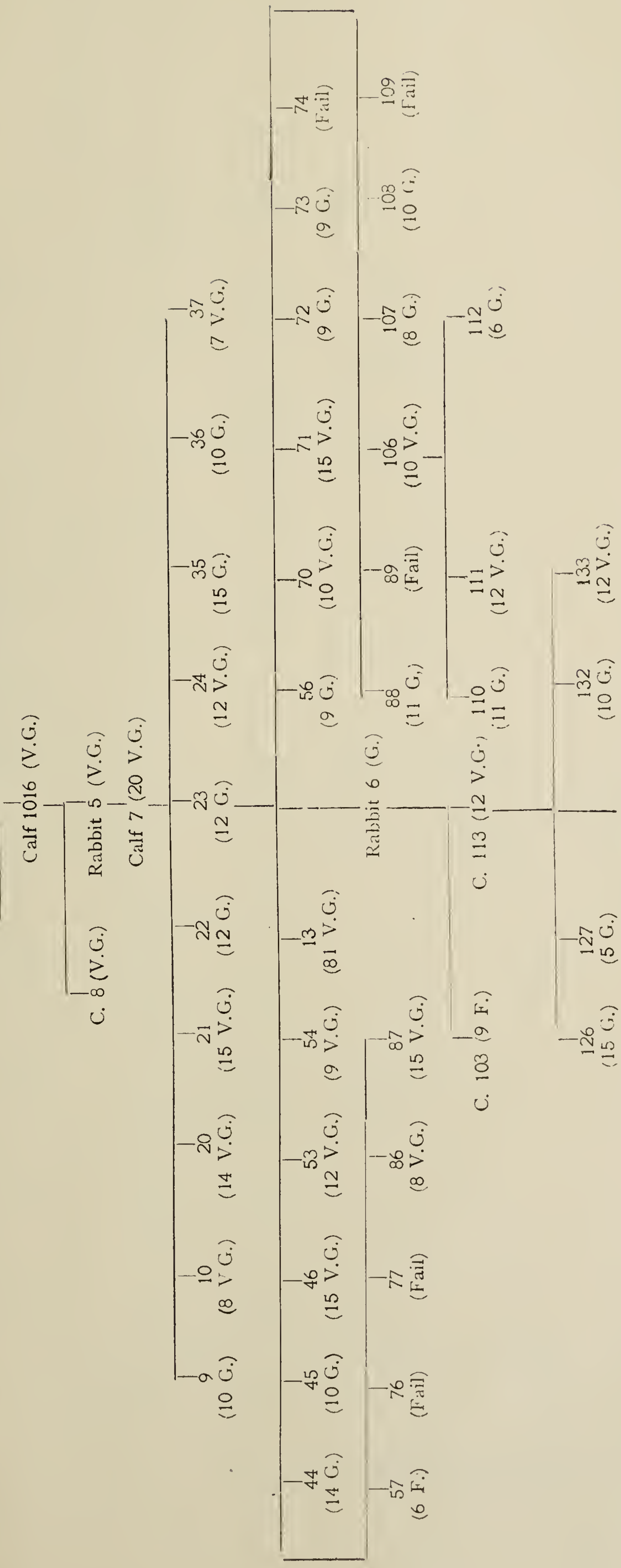
5.—Production of Calf Lymph, 1928 : Summary.

Number of calves vaccinated	131
Number of calves vaccinated successfully	118
Number of grammes of pulp collected	1,341.0
Average number of grammes of pulp per calf ...	10.24
Number of doses manufactured	402,300
Number of doses issued	617,460
Number of doses in stock at end of 1928	318,600
Cost of calf lymph production	£498
Cost per dose issued	.1936d.
Cost per dose manufactured	.2971d.

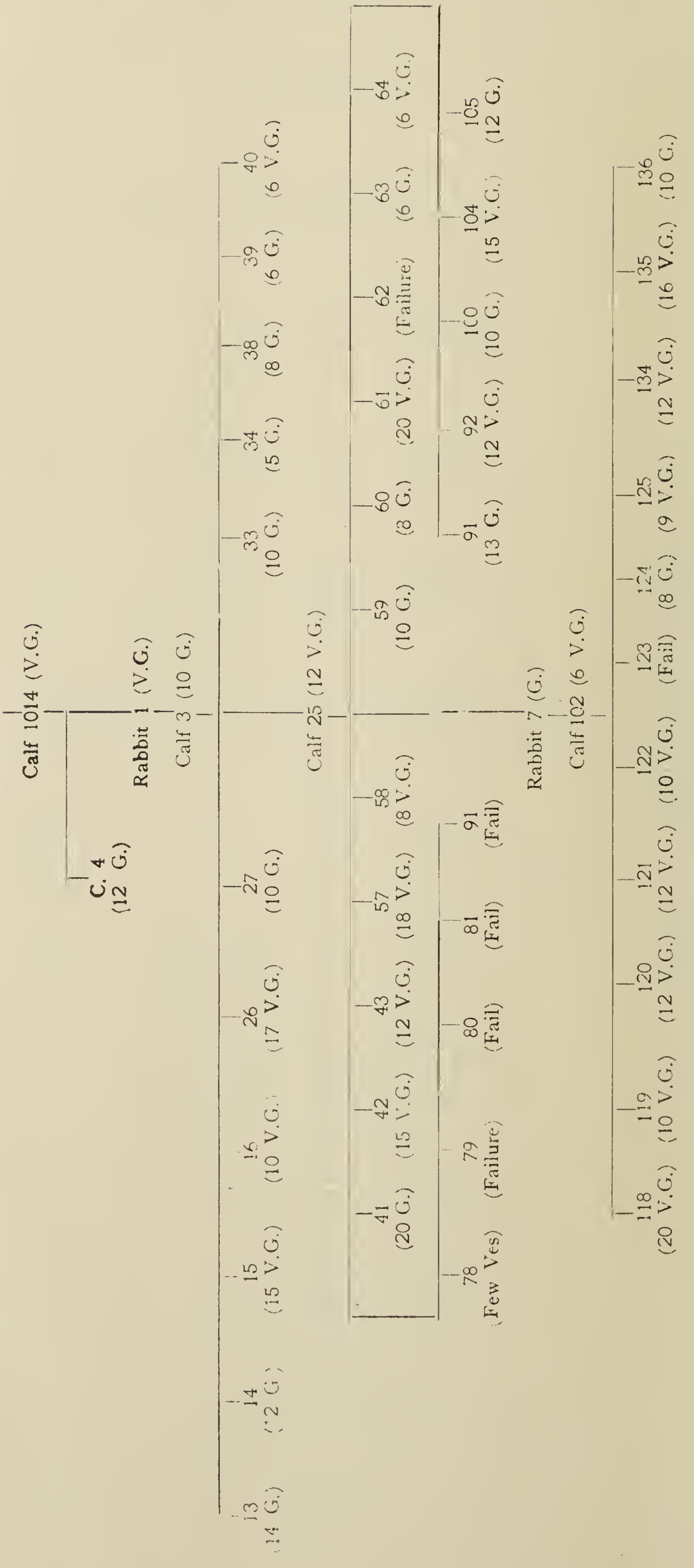
ZANZIBAR STRAIN, 1928.



SOUTH AFRICAN STRAIN, 1928.



BELGAUM STRAIN, 1928.



VACCINATION RETURN, 1928.

STATIONS	Total Doses Issued	Total No. Persons Vaccinated	SEX			AGE			RACE				PRIMARY VACCINATION				RE-VACCINATION				PREVIOUS VACCINAL CONDITION UNKNOWN			
			Male	Female	Unknown	Adult	Children	Unknown	European	Asian	African	Unknown	Total	Succ.	Fail	Unknown	Total	Succ.	Fail	Unknown	Total	Succ.	Fail	Unknown
Eldoret	480	449	447	2	..	448	1	..	..	1	448	..	418	60	19	339	31	..	..	31	..	..	..	..
Italian Somaliland	120,000	Unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kisumu	351,300	12,430	12,403	27	..	12,224	206	..	3	6	12,421	..	34	..	1	33	407	112	157	138	11,989	..	..	11,989
Kakamega ..	26,000	2,811	2,810	1	..	2,811	..	..	..	..	2,811	..	959	57	1	901	1,852	14	20	1,818	..	..	..	..
Kapsabet	338	107	99	8	..	97	10	..	..	3	104	..	92	58	26	8	15	10	2	3	..	..	..	..
Kericho	600	Vaccination Returns not received for the year.																						
Kisii	7,500	5,661	5.658	3	..	5,657	4	..	1	3	5,657	..	3,826	4	..	3,822	1,835	..	..	1,835	..	..	..	..
Kitui	1,650	863	863	..	..	863	..	..	..	..	863	..	300	..	..	300	563	..	..	563	..	..	..	..
Lamu	3.400	215	204	11	..	206	9	..	..	1	214	..	43	11	11	21	172	5	23	144	..	..	..	..
Machakos ..	5,200	145	136	9	..	136	9	..	9	3	133	..	75	..	..	75	70	..	..	70	..	..	..	..
Malindi	950	50	49	1	..	22	28	..	..	..	50	..	50	45	5	..	..	..	..	..	..	..	..	..
Meru	1,800	145	145	..	..	145	..	..	..	..	145	..	110	12	33	65	35	..	..	35	..	..	..	..
Mombasa	31,000	9,995	2	..	9,993	9,995	..	..	142	5,201	4,652	..	..	..	..	..	..	..	..	..	9,995	..	..	9,995
Nairobi	13,561	4,714	2,399	439	1,876	3,738	976	..	18	903	3,793	..	710	238	29	443	1,355	249	397	709	2,649	..	..	2,649
Nakuru	5,200	405	405	..	..	405	..	..	..	..	405	..	64	64	..	..	341	341	..	..	..	..	..	..
Nyeri	1.000	314	312	2	..	310	4	..	..	4	310	..	295	20	5	270	19	1	..	18	..	..	..	..
Uganda	41,000	Unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Voi	5,200	Nil	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Various Stations and Practitioners	1,231	226	152	74	..	152	74	..	1	73	152	..	69	34	14	21	157	14	109	34	..	..	..	..
GRAND TOTAL..	617,460	38,530	26,084	577	11,869	37,209	1,321	..	174	6,198	32,158	..	7,045	603	144	6,298	6,852	746	708	5,398	24,633	..	..	24,633

D.—PATHOLOGICAL SECTION.

1.—HISTOLOGICAL EXAMINATIONS.

366 pathological specimens were examined during the year. Of these 167 were from Europeans, 5 from Asiatics, 116 from Africans, 58 from post-mortems, and 20 from animals.

The details are as follows :—

Europeans.

Appendix	Total	116	Normal	16
			Early Inflammation	19
			Acute Inflammation ...	41
			Sub-acute Inflammation ...	40
Tumours	Total	41	Benign	28
			Malignant	13
Curettage	Total	8	Non-malignant	5
			Malignant	3
Kidneys	Total	1	Parenchymatous nephritis ...	1
Skin	Total	1	Tuberculosis	1
	Grand Total	167		

Asiatics.

Tumours	Total	4	Benign	2
			Malignant	2
Appendix	Total	1	Sub-acute Inflammation ...	1
	Grand Total	5		

Africans.

Tumours	Total	65	Benign—	
			Chondroma	1
			Cysts	5
			Fibroma	14
			Lipoma	1
			Osteoma	2
			Malignant—	
			Carcinoma	22
			Endothelioma ...	1
			Sarcoma	18
			Hypernephroma ...	1
Inflammatory lesions .		49	Appendix (chronic)	1
			Tuberculosis	21
			Other Inflammations ...	27
Trypanosomiasis ...	Total	1		
Leucodermia ...	Total	1		
	Grand Total	116		

Post-mortem Specimens.

Tumours	Total	11	Benign	0
			Carcinoma	9
			Sarcoma	2
Tubercular Specimens		13		
Lungs	Total	3	Congested	2
			Fibrotic	1
Pancreas	Total	3	Diabetic	1
			Fibrotic	2
Spleen	Total	9	Abscess	1
			Malarial	4
			Fibrotic	3
			Trypanosomiasis	1
Liver	Total	4	Amyloid	1
			Fatty	2
			Gumma	1
Brain	Total	4	Malarial	1
			Inflammatory	2
			Trypanosomiasis	1
Intestines	Total	1	Amoebic dysentery	1
Kidneys	Total	4	Acute nephritis	2
			Chronic parenchymatous nephritis	2
Septicaemic organs		4		
	Grand Total	56		

Animals.

Organs for trypanosomiasis	16
Granulation tissue	1
Brain for filaria	1
Organs for coccidiosis	2
Grand Total	20

The most interesting specimen seen was a small nodule in the endocardium in a tuberculosis case. In this nodule tubercle bacilli were identified.

2.—POST-MORTEM EXAMINATIONS.

210 post-mortem examinations were carried out by the Laboratory staff during the year; of these, 41 were undertaken at the request of the Police.

The causes of death were found to be as follows:—

Dysentery (bacillary)		4
Electrocution		2
Enteric—		
Enteric	7	
Enteric and peritonitis	7	
		14
Gas gangrene		2
Heart—		
Aortic incompetence	1	
Endocarditis	1	
Myocarditis	4	
Pericarditis	1	
		7
Hodgkin's Disease		1
Liver—		
Cirrhosis	2	
Rupture	1	
		3

Malaria—		
Cerebral	3	
Subtertian	4	
		7
Meningitis		2
Mesenteric thrombosis		1
Nephritis—		
Acute	1	
Chronic parenchymatous	3	
Chronic interstitial	1	
Pyaemic	1	
		6
Pernicious anaemia		1
Plague		6
Pneumonia—		
Broncho-pneumonia	2	
Lobar pneumonia	51	
Pneumonia and meningitis	19	
Pneumonia and pericarditis	7	
Pneumonia, pericarditis and meningitis ...	2	
		81
Poisoning		3
Sarcoma		1
Scurvy and dysentery		2
Septicaemia	16	
Puerperal septicaemia and Pulmonary embolus	1	
		17
Shock		1
Spirillum fever		1
Tuberculosis		21
Wounds—		
Fracture of skull	12	
Wounds of abdomen	1	
Wounds of lungs	4	
Wounds of neck	2	
Other wounds	1	
Dislocation of cervical vertebrae ...	1	
		21
Unknown		3
Grand Total ...		210

E.—BACTERIOLOGICAL SECTION.

Total number of specimens dealt with during the year	3,092
Specimens requiring cultural examinations	1,385
Specimens requiring microscopical examination	1,707

(The above figures are exclusive of examination of water and food samples, and of disinfectants).

A.—MAIN INFECTIVE CONDITIONS.

(*a*) *Anthrax.*—Of six external lesions or specimens from such examined, anthrax bacilli appeared in four; of these positive cases, three were Europeans.

(*b*) *Diphtheria.*—Pharyngeal and nasal swabs were examined from 259 patients and contacts; of these, 56 were positive.

(*c*) *Dysentery.*—Flexner Type: of 41 cultures of stools from dysenteroid cases, 4 yielded organisms of the Flexner group. Shiga Type: Two only out of 41 cultures of stools yielded B. dysenteriae of Shiga. Of frequent occurrence in pathological stools were unclassified non-lectose-fermenting or slow lactose-fermenting organisms of the typho-coli group, any of which may perhaps be capable of a causative or aggrative dysenteric part.

(*d*) *Gonorrhoea*.—Of a total of 119 specimens of urethral and vaginal discharge, and of urine, 46 contained gonococci.

(*e*) *Leprosy*.—Of 14 specimens of nasal discharge examined, 1 contained Myco. leprae.

(*f*) *Plague*.—Human : Of 46 specimens of spleen, gland, etc., from post-mortem cases suspected of plague infection, 17 showed the presence of plague bacilli. Out of 4 specimens of sputum from suspected cases, one was positive.

Rats : 105 rats found dead in Nairobi district were examined; in 56 of these plague bacilli were demonstrated by microscopic examination, and in most cases by cultural and serological tests as well. Of rats killed by trapping in Nairobi district, 146 were examined; of these, 2 only were found to be infected with plague. Smears from the spleens of 840 rats killed by trapping in the Nakuru district were examined; in none of these could plague bacilli be demonstrated microscopically. In this connexion it is surmised that rats sick with plague are not caught by the method of trapping used.

(*g*) *Tuberculosis*.—Of 394 specimens of suspected sputum examined microscopically 60 contained tubercle bacilli. The number of European cases among these is negligible. Of discharge from glands, 2 out of 7 specimens were positive; all native cases.

(*h*) *Typhoid and Para-typhoid Group*.—Typhoid bacilli were cultivated from 5 out of 14 specimens of urine, from 1 out of 19 specimens of stool, and from organs of five post-mortem cases. Para-typhoid organisms were not isolated in a single instance. Organisms referable to the Eberthella and Salmonella genera were of frequent occurrence in pathological stools, though differentiable from any known pathogenic type.

B.—PREPARATION OF VACCINES.

(*a*) *Autogenous Vaccines*.—114 autogenous vaccines were made during the year, and 42 patients were under vaccine treatment in the Section. Of these, a considerable proportion were of the " agglutinating coliform " type, for rheumatic conditions—a method of treatment which continues to yield encouraging results.

(*b*) *Stock Vaccines*.—Plague : 155,000 doses were prepared of Haffkine type; and 42,205 doses were issued to the Colony.

Typhoid-Para-typhoid : 50,000 doses of T.A.B. or T.A.B.C. vaccine were prepared by an original method, and 6,515 doses were issued.

C.—MISCELLANEOUS.

(*a*) *Examination of Foodstuffs*.—6 samples of tinned foods were subjected to bacteriological analysis on behalf of the Health Authorities, or private firms.

(*b*) *Water*.—Bacteriological analyses of 49 samples of water were performed.

(*c*) *Disinfectants*.—3 samples of disinfectant were subjected to Admiralty Tests.

D.—RESEARCH.

Research was attempted on the presumedly pathogenic non-lactose-fermenting organisms referred to under paragraph A as frequent in enteric conditions; on the potency of Nairobi plague and anti-typhoid vaccines, by inoculation experiments on rats and rabbits, and on the presence of heat-stable S agglutinations in T.A.B.; and on the production of high-titre agglutinating serum for plague, using this for absorption tests on plague cultures collected locally in view of the possible existence of a type variant. An original method for absorption tests was devised, designed for economy of serum apparatus, space and time. It was intended to test high-titre plague serum for its curative value with artificially infected animals, but the limited stock of suitable laboratory animals had to be used for other more urgent work.

F.—HELMINTHOLOGICAL AND PROTOZOOLOGICAL SECTION.

It was considered that the routine methods applied to the detection of ova in faeces were not perhaps giving the optimum results, and a more satisfactory technique was sought.

The following methods were tested out :—

(1) Flotation with concentrated saline and centrifugalisation (Clayton Lane's D.C.F. method).

(2) Flotation with concentrated magnesium sulphate and glycerine.

(3) Simple centrifuging and examination of the deposit.

(4) De Rivera's acetic acid and other technique.

(5) Simple smear.

Of these, Clayton Lane's method of direct centrifugal flotation gave the best results, a much higher percentage of positives being obtained than by any other method. De Rivera's acetic acid and ether came second, but the cost of the ether necessary was prohibitive. Petrol was tried as a substitute for ether, as it has approximately the same specific gravity, but was found not to be suitable, as the plug of fæcal debris was not compressed enough, and took up some five-eighths of the total length of the centrifuge tube.

In the diagnosis of the protozoa in fæces, it was found that the old method of centrifuging with saline gave the best results. From these investigations it was decided to adopt Clayton Lane's technique for the diagnosis of all ova in fæces (an examination of deposit revealing the heavier ova). For a diagnosis of the protozoa, simple centrifuging with saline was used.

During the year, the washing of some two hundred whole stools was undertaken, tænia segments being sought. This work was done in conjunction with treatment by carbon tetrachloride. The results will be published in due course.

A small piece of work was done to ascertain the contents of natives' finger nails. Nail scrapings from fifty prisoners at the Nairobi Gaol were examined; of these 30 per cent. were found to be infected with helminth ova of some kind—Oxyuris vermicularis and Tænia eggs being the commonest. It is significant that no ascaris ova were discovered, in spite of the fact that many of the stools examined in conjunction with the nail scrapings contained a heavy infection of this worm. No cysts of any description were found in the smears made from the nail scrapings.

Early in the year an Assistant Bacteriologist was lent for an investigation in the Digo District, to take part in the examination of a typical Coast community.

The laboratory side of the investigation consisted in the performance of egg counts on stools by Clayton Lane's technique, and also in the taking of nasal swabs from all cases, these being later searched for lepra bacilli. It was intended that twenty c.c. of blood should be obtained from two hundred adults, so that their blood calcium could be estimated and their Sigma reactions done. This was unfortunately impossible, as all the patients were Mohammedans and were keeping the fast of Ramathan at the time of the investigation, and refused to have blood drawn until after the fast. The actual figures for the counts showed a 100 per cent. infection by Ancylostomes.

In Appendix I is given a table showing the results of examinations of bloods and fæces carried out in the Laboratory.

On nearly every blood smear which was examined for malarial parasites and found negative, a differential white count was made.

G.—SECTION OF MEDICAL ENTOMOLOGY.

1.—ORGANISATION.

The staff was increased during the last two months of the year by an additional Asiatic Laboratory Assistant, two European Field Assistants, and some eighteen African field mosquito boys. These additions were made necessary by the demand for intensive and extensive investigations on mosquitoes—a result of the serious malarious conditions which occurred in several districts during the year. The essential articles of the additional field equipment are two motor lorries, each fitted with bench, cupboard and shelves. These enabled us to carry out thorough mosquito surveys in the Uasin Gishu and Trans Nzoia areas; a work that became urgently necessary.

The need for a trained European Laboratory Assistant is very great. Routine work is increasing at an enormous pace, and it is becoming more and more difficult to cope with the demands in the field and in the Laboratory. It is hoped that an Assistant may be obtained early in the New Year.

The selection and training of our African staff demands much time and patience. We are still unable to attract the more intelligent and ambitious Africans, mainly on account of the low initial salaries offered, and we are also still unable to enlist suitable boys for definite periods. We still have a few boys who were appointed very early in the history of this section, who, though possessing a good knowledge of their field work, are still unable to write.

2.—MOSQUITOES.

Since the return from leave of the Senior Entomologist in April it has been possible to carry out more intensive mosquito surveys in a greater variety of areas. The recording of field observations is gradually being standardised by the use of printed forms. This produces quicker and more accurate results.

Districts dealt with are as follows :—

a. Nairobi.
b. Fort Hall.
c. Kiambu.
d. Ngong.
e. Kisii.
f. Mombasa.
g. Nakuru.
h. Eldoret.
i. Uasin Gishu.
j. Kitale.
k. Trans Nzoia.
l. Voi.
m. Taveta.
n. Teita.
o. Masongaleni.
p. Digo (Msambweni).
q. Kericho.
r. Nandi.

In Nairobi continuous observations have been kept up on the seasonal incidence of species, domesticity of species, natural infectivity, efficacy of control measures (oiling and draining), and so on.

A certain amount of time has been devoted to the work of the Nairobi Anti-Malarial Committee, in the capacity of a member; and also in co-operating in the drawing up of a roster of engineering work to be executed.

The filling up of all borrow pits in the municipal area, and the commencement of major works on streams, is a satisfactory first result of much tiresome agitation from this and other sections of the Department.

At Mombasa, Nakuru and Kisii, trained boys have been attached to the respective Medical Officers of Health to carry out continuous catches over a period sufficiently long to provide data on the seasonal prevalence of species, and to indicate Anopheline breeding grounds for control measures.

In November, a continuous survey of selected blackwater fever areas in the Uasin Gishu and Trans Nzoia districts was started. One European Field Assistant with five trained boys and a lorry is centred in Eldoret; and the other, similarly equipped, in Kitale. Their tours are so managed that they are able to cover the selected areas about six times a year. They are trained to make exhaustive mosquito surveys, and to collect information with regard to the housing and personal habits of settlers, the sanitation, topographical and clinical features of the areas and estates selected for surveys. They are also able to indicate to settlers the sources of local mosquitoes, and to suggest minor measures of control and personal protection. The primary aim is investigation; the secondary, though perhaps equally important, the education of settlers in the essentials of the causes and prevention of malaria.

All other districts mentioned, except Kericho and Nandi, have been surveyed periodically for the purpose of collecting data on Anopheline seasonal activity, general bionomics, and relation to man. Taveta and Teita districts are almost purely native areas. As much attention as staff and time permit will be devoted to these during the next year.

In Taveta there exists an intense infestation of *A. funestus*, with a very high degree of endemic malaria, providing an excellent field for the study of this species.

Serious outbreaks of malaria occurred in the Kericho and Nandi districts early in the year, but this section was informed too late to allow of the collection of mosquito data. Through such errors in notification we are continually losing golden opportunities for the acquisition of information that cannot but be of the very greatest epidemiological value.

Many larvæ that appear to be those of *A. nili* were obtained from the Lumi River near Mount Kilimanjaro. *A. implexus* has been found in appreciable numbers in various localities in the Trans Nzoia district.

Investigations on the pH values of natural waters were discontinued in May. It is hoped that the results may be published early in the New Year.

An article entitled "Notes on Anophelines and Malaria in Kenya," embodying results of investigations up to May, 1927, was produced in the Kenya Medical Journal in August of this year.

3.—FLEAS.

Surveys of rat-fleas in all the localities where work was carried out in 1927 have been continued. It is now felt that we have sufficient general information from these localities, and it is intended to cease work at several, and concentrate on the remainder with a view to obtaining more detailed information than has previously been possible. The data hitherto obtained are being analysed for presentation as early as possible.

All rats examined for fleas are now skinned, and the skins identified in Nairobi. This results in greater accuracy in our knowledge of the flea-fauna of different species of rats.

The survey of field rodents at Nakuru will finish at the end of the year, and it is intended to transfer the field staff to the Kiambu area, where they will carry out a similar survey in a locality with quite different climatic and agricultural features.

Towards the end of the year a series of laboratory observations on the bionomics of fleas was begun; these will be continued in 1929.

4.—MYASIS.

Cordylobia anthropophaga occurred in relative abundance during the year in Europeans in Nairobi districts. Heavy infestations were reported on dogs at Kitale.

Two specimens of adult calliphornes (? *Lucillci sp.*) were submitted by the District Surgeon, Eldoret, who stated that he obtained them, post-mortem, in the left ventricle of a European. These were submitted to the Imperial Bureau of Entomology.

5.—TICKS.

O. moubata.—No intensive work has been done in connection with this vector, but observations on longevity have been continued. Of the specimens of unfed newly-born larvæ mentioned in 1926 and 1927 reports, all but some eleven had died by May, 1928, after a period of fasting varying from eight to twenty-seven months. The survivors were fed on rabbits; all died, except two females, by the end of the year; one of these has apparently reached maturity. The main points in the history of this specimen are :—

1. Hatched from egg : February, 1926.
2. Period of fasting : 27 months.
3. First fed on rabbit : 29/5/28 (10 minutes).
4. Moulted : 112/6/28.
5. Fed : 19/6/28 (35 minutes).
6. Moulted : 7/9/28.
7. Fed : 12/9/28 (30 minutes).
8. Moulted : 4/10/28.
9. Fed : 6/10/28 (73 minutes).
10. Fed : 14/12/28 (50 minutes).

This specimen, with the others, had had opportunities to feed every day except on Sundays. The minutes noted are the periods of attachment to the shaven ear of the rabbit at each feed.

6.—TSETSE FLY.

No work has been done on this during the year.

7.—GENERAL.

An exhibit was staged in the public health building at the East African Agricultural Show in October. Malaria was emphasised as fully as possible, and other diseases to a somewhat less extent. There is no doubt of the value of such shows.

H.—BIOCHEMICAL SECTION.

The organisation in this section remained the same during the year.

1.—ROUTINE WORK.

The following table gives the nature and number of biochemical examinations made during the year :—

Urines—	
General examination, *i.e.*, reaction, specific gravity, sugar, albumin and microscopic examination of deposit	266
Albumin and microscopic examination of deposit ...	18
Albumin and sugar	12
Microscopic examination of deposit	9
Fæces—	
Occult blood	4
Fat content	2
Blood—	
Sugar tolerance curves	3
Chemical examination of other body fluids	2
Anæsthetics for impurities	2

In addition to these, the following miscellaneous examinations were carried out :—

1 lævulose hepatic efficiency test.
1 blood and urine for presence of bile.
1 blood for non-protein nitrogen content.
1 urine for urea concentration test.
1 specimen of vomit for blood and bile.
1 specimen of urine from a case of suspected bismuth-poisoning.
1 fractional test meal.
3 specimens of biliary calculi.

The work on the colorimetric estimation of hydrogen ion concentration of waters for the Medical Entomologist, begun in 1926, was concluded in the month of May.

During the year the preparation of bismuth compounds for the treatment was continued. Attempts were made to produce sodium tetra-bismuth tartrate, as described by Kober (Journal of Laboratory and Clinical Medicine, Vol. XII, 1927, p. 962), but these proved unsuccessful. Towards the end of the year a method was elaborated whereby a fine suspension of metallic bismuth was prepared in isotonic glucose solution, and it is hoped to produce this on a large scale.

2.—Research Work.

The study of nutritional problems has been continued, and in this connection the following experimental work has been carried out :—

(*a*) At Nairobi Prison, with the co-operation of the Prison Authorities, an experiment was started at the end of 1927, on the effects of the addition to the Prison Hospital diet of calcium in a cheap and economical form, *viz.*, as calcium carbonate and bone flour. The retention of this element was followed out for a considerable period by analyses of its intake in food, and its output in fæces and urine. The results are now ready for publication. Towards the end of the year another balance experiment was started to find the effects of similar additions to the diets of prisoners infected with tænia.

(*b*) Through the co-operation of the Superintendent of Kabete Reformatory, and with the financial assistance of a grant from the Civil Research Council of the Empire Marketing Board, a large scale feeding experiment with 160 subjects was started in August, and is still in progress. It will be reported in detail in due course.

(*c*) In addition, the preparation for despatch to the Rowett Research Institute of native foodstuffs sent in by an officer working in the Reserves, was continued as previously reported.

The duties of the Government Analyst's Department were carried out from 5th March until 30th September.

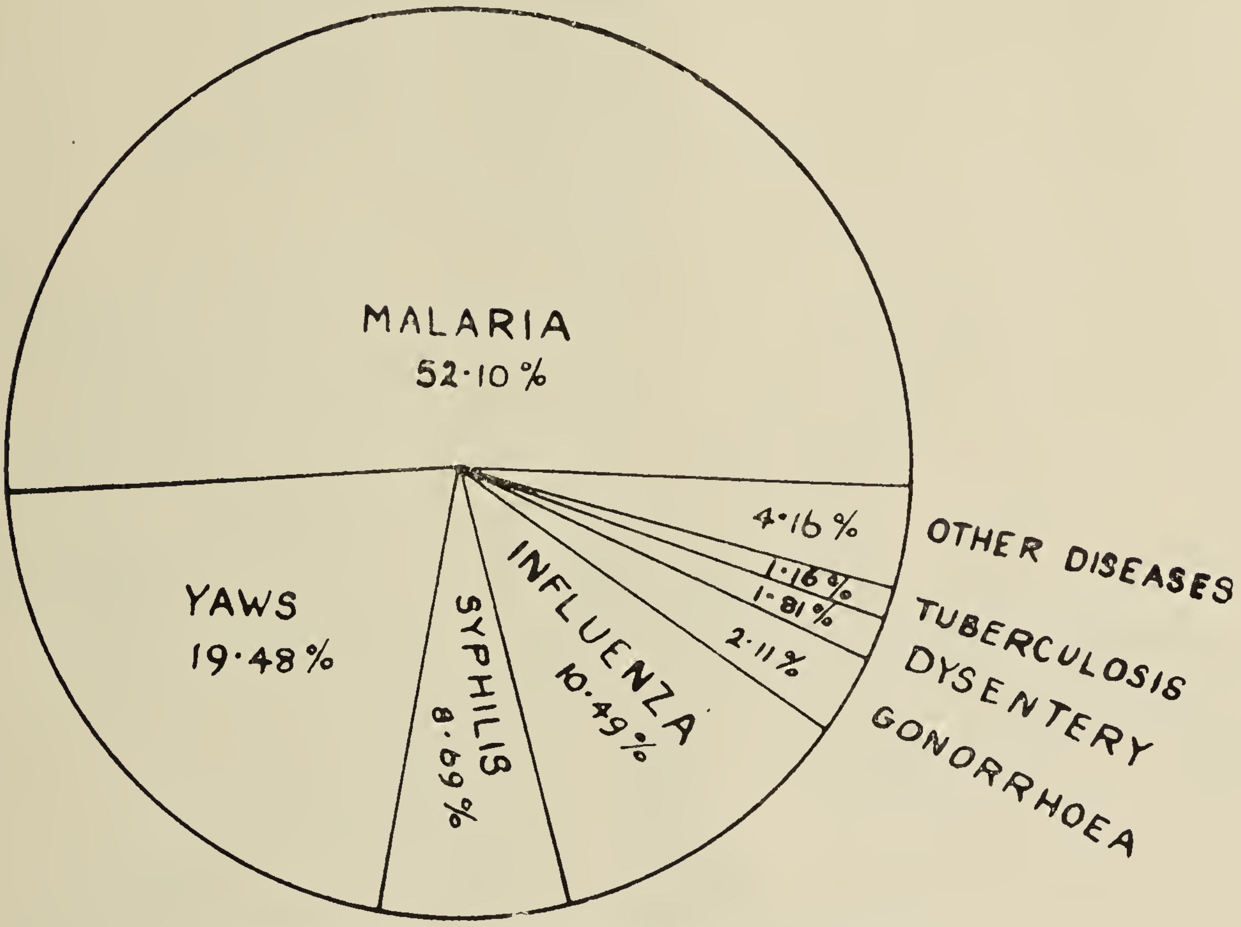
RECORD OF FAECES EXAMINED DURING 1928.

Place Examined	Source of Specimen	Race	Negative	Tænia Saginata	Ascaric Lumbricoides	Ancylostona Duodenale	Trichuris Trichiura	Strongyloides Stercoralis	Schistosomum Mansoni	Oxyuris Vernicularis	Hymenolepis Nana	Schistosomum Hæmatobium	Heterophyes Heterophyes	Unidentified Ova	Entamœba Coli	Iodamœba Butschlii	Flagellates Undiff.	Giardia Intestinalis	Entamœba Histolytica	1 Helminth	2 Helminth	3 Helminth	4 Helminth	6 Helminth	6 Helminth	1 Protozoon	2 Protozoon	3 Protozoon	1H+1P	2H+1P	3H+1P	4H+1P	1H+2P	2H+2P	3H+2P	4H+2P	1H+3P	
irobi . .	Native Hospital . .	Africans and Asians . .	937	1,145	660	1,208	908	165	208	22	7	3	1	1	545	62	53	24	38	1,279	788	297	32	5	2	232	14	1	325	124	37	5	24	11	3	2	1	4,109
,, . .	Government Officials	Europeans . .	173	4	1	2	6	. .	. .	. .	. .	. .	. .	. .	1	. .	2	15	2	12	. .	. .	. .	. .	. .	19	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	205
,, . .	,, ,,	Asians . .	10	. .	. .	1	1	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	2	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	13
,, . .	Dispensaries . .	Africans . .	25	3	2	11	7	. .	1	. .	. .	. .	. .	. .	4	2	1	3	. .	14	4	. .	. .	. .	. .	4	2	. .	2	. .	. .	. .	. .	. .	. .	. .	. .	51
,, . .	Private Practitioners	Europeans . .	179	4	1	5	13	. .	2	. .	1	. .	. .	. .	6	1	6	3	5	23	1	. .	. .	. .	. .	18	2	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	224
,, . .	,, ,,	Asians . .	22	. .	1	1	2	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	3	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	26
,, . .	Juja	Africans . .	2	14	21	9	25	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	12	11	8	3	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	36
,, . .	Outstations	Undifferentiated . .	6	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	7
,, . .	Miscellaneous . .	Africans . .	170	95	13	88	63	13	13	1	1	. .	. .	. .	31	4	3	6	3	143	41	11	1	. .	. .	21	1	. .	12	1	1	. .	1	2	. .	. .	. .	405
	Total from Nairobi	. . . .	1,524	1,265	699	1,325	1,024	178	225	23	9	3	1	1	590	69	65	51	48	1,488	835	316	36	5	2	296	19	1	342	125	38	5	25	13	3	2	1	5,076
mbasa	European Hospital— In-patients . .	Europeans . .	6	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	2	2	. .	. .	. .	. .	. .	. .	4	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	10
,,	Out-patients . .	,, . .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	2
,,	Native Hospital— In-patients . .	Africans and Asians . .	286	349	455	697	697	96	71	7	2	. .	. .	. .	103	4	. .	4	4	453	449	275	56	1	. .	35	1	1	41	28	11	2	. .	. .	. .	. .	. .	1,639
,,	Out-patients . .	Africans . .	2	. .	2	1	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	2	. .	. .	. .	. .	. .	. .	. .		. .	. .	. .	. .	. .	. .	. .	. .	4
,,	,, . .	Asians . .	8	1	3	6	9	2	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	9	5	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	23
,,	Goal	Africans . .	66	51	71	102	102	14	5	1	. .	. .	. .	. .	5	. .	. .	1	. .	96	81	23	2	. .	. .	. .	. .	. .	1	. .	2	. .	. .	. .	. .	. .	. .	271
,,	Infectious Diseases Hospital	Africans . .	48	30	50	101	71	18	11	. .	. .	. .	. .	. .	74	. .	. .	3	3	53	49	20	8	1	. .	10	. .	. .	9	9	. .	. .	. .	. .	. .	. .	. .	207
,,	Private Practitioners	Undifferentiated . .	105	2	1	7	1	. .	. .	. .	. .	. .	. .	. .	2	. .	. .	3	21	11	. .	. .	. .	. .	. .	24	2	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	143
,,	M.O.H.	Africans . .	38	16	53	50	67	6	2	. .	. .	. .	. .	. .	6	. .	. .	. .	. .	40	42	21	. .	. .	. .	. .	2	. .	1	2	2	. .	. .	. .	. .	. .	. .	148
,,	Schools	Arab and Africans . .	52	15	257	154	297	26	2	1	. .	. .	. .	. .	35	. .	. .	. .	. .	115	180	86	10	. .	. .	7	. .	. .	9	10	. .	. .	. .	. .	. .	. .	. .	469
	Total from Mombasa	. . . .	612	464	892	1,018	1,245	162	92	9	2	. .	. .	. .	225	4	. .	14	30	777	808	426	76	2	. .	83	3	1	62	49	15	2	. .	. .		. .	. .	2,916
	GRAND TOTAL . .	. . . .	2,136	1,729	1 591	2,343	2,269	340	317	32	11	3	1	1	815	73	65	65	78	2,265	1,643	742	112	7	2	379	22	2	404	174	53	7	25	13	3	2	1	7,992

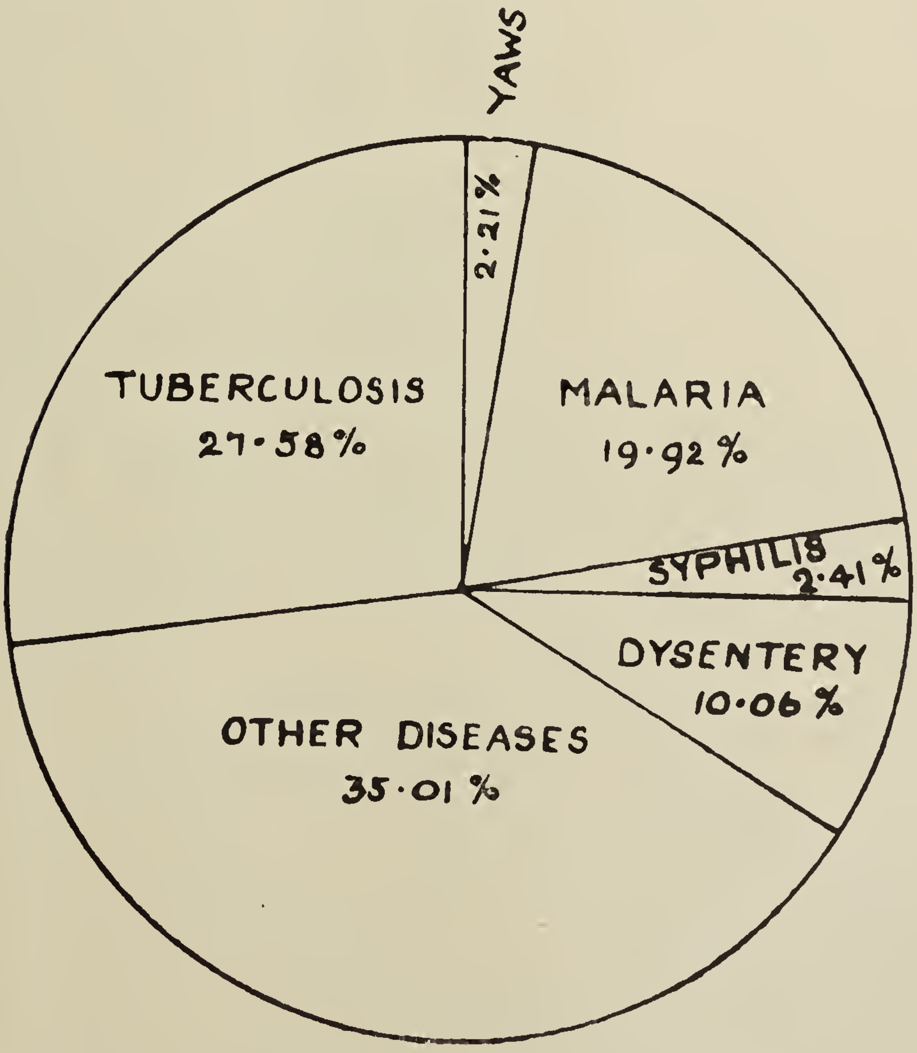
RECORD OF BLOODS EXAMINED DURING 1928.

Where Examined	Source	Race	Blood Counts	Negative	P. Falciparum	P. Malariæ	P. Vivax	S. Rossi	Trypanasoma	Sheathed Microfilariæ	Unsheathed Microfilariæ	Mixed Infections	Total Examined for Parasites.
Nairobi	Native Hospital	Asian and African	35	3.575	457	70	7	6	2	1	52	8	4,170
,,	Government Officials	European	247	243	48	2	3	..	1	..	..	..	297
,,	,, ,,	Asian	8	105	18	..	2	..	..	..	..	..	125
,,	Dispensaries	African	8	151	34	..	11	1	1	..	..	..	198
,,	M.O.H., Kisumu	,,	..	62	64	7	1	..	..	..	1	2	135
,,	,, ,,	Asian	..	132	46	9	7	..	..	..	..	2	194
,,	Goal	Undifferentiated	166	174	9	1	2	..	..	..	1	..	187
,,	Juja	African	..	40	16	1	1	..	..	..	1	..	59
,,	Outstations	Undifferentiated	5	89	59	5	..	10	..	..	..	2	163
,,	Miscellaneous	,,	1	392	33	5	2	..	..	..	2	..	435
,,	Private Practitioners	European	251	271	39	3	4	..	..	..	..	..	317
,,	,, ,,	Asian	27	26	1	1	..	..	..	..	..	..	23
	Total from Nairobi	..	748	5.260	824	115	30	13	3	1	57	14	6.303
Mombasa	European Hospital—In-patients	European	3	23	17	1	..	..	..	..	..	..	41
,,	,, ,, Out-patients	,,	3	10	6	1	..	..	..	..	..	..	17
,,	M.O.H.	Undifferentiated	4	34	8	1	..	..	..	..	..	..	43
,,	Native Hospital—In-patients	Asian and African	112	1.185	172	1	8	1	..	3	7	..	1.377
,,	,, ,, Out-patients	African	..	3	1	..	..	..	..	..	..	..	4
,,	,, ,, ,,	Asian	1	13	9	..	..	..	..	..	..	..	22
,,	Goal	African	..	1	..	..	..	..	..	..	..	..	1
,,	I.D.H.	African	13	81	6	..	..	1	..	..	..	..	88
,,	Private Practitioners	Undifferentiated	113	203	39	2	4	..	..	..	..	..	248
	Total from Mombasa	..	249	1.553	258	6	12	2	..	3	7	..	1,841
	GRAND TOTAL	..	997	6,813	1,082	121	42	20	3	4	64	14	8,149

Proportion in Percentages of Epidemic, Endemic and Infectious Diseases, In and Out Patients, treated at Hospitals and Dispensaries.

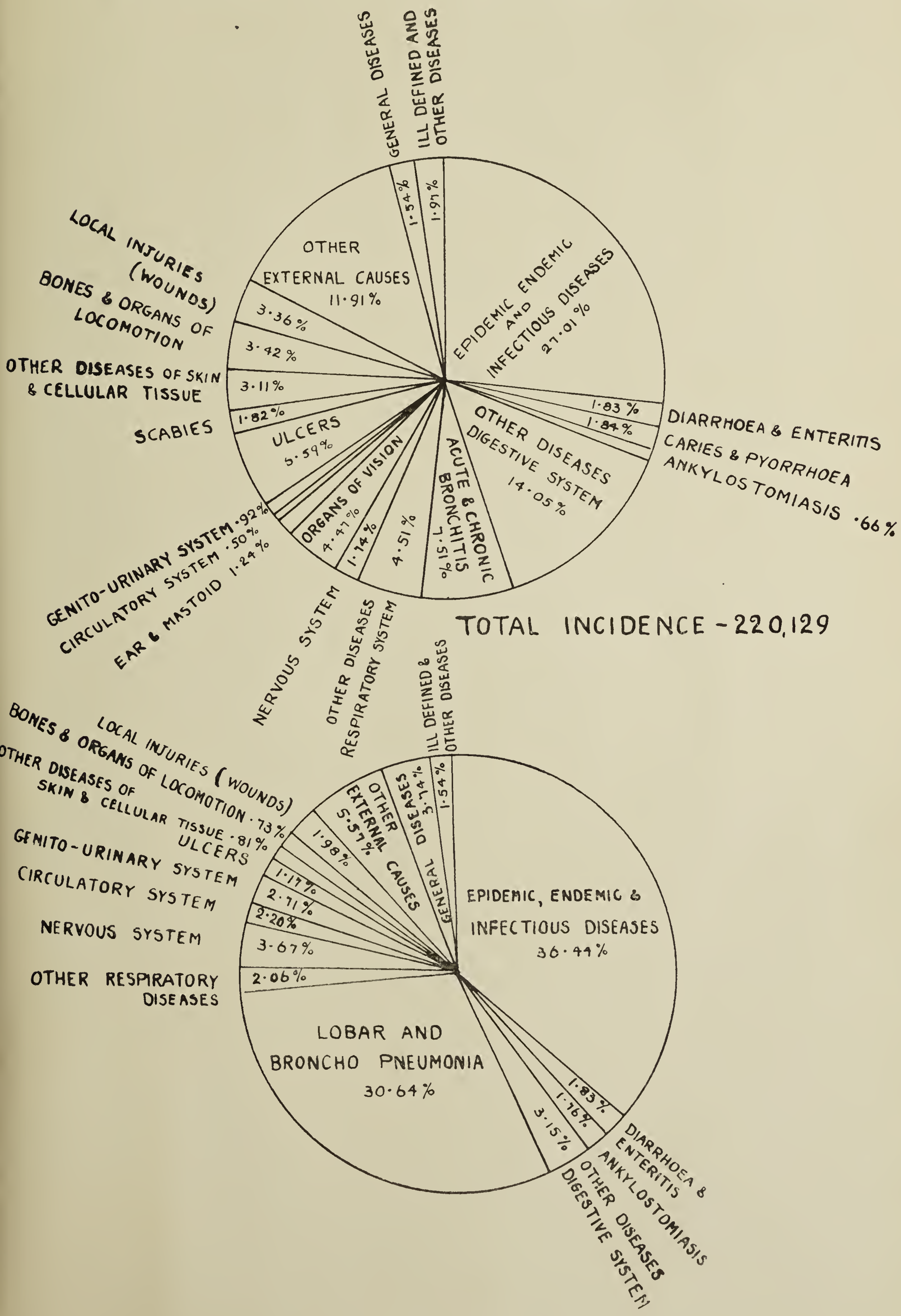


TOTAL INCIDENCE—59,446.



TOTAL DEATHS—497.

The Proportion of Epidemic, Endemic, Infectious, Systemic, and other Diseases shewn as percentages of Total Cases treated at Hospitals and Dispensaries.



TOTAL DEATHS—1,346.